United States
Environmental Protection
Agency

Air Pollution Training Institute
MD 17
Environmental Research Center
Research Triangle Park NC 27711

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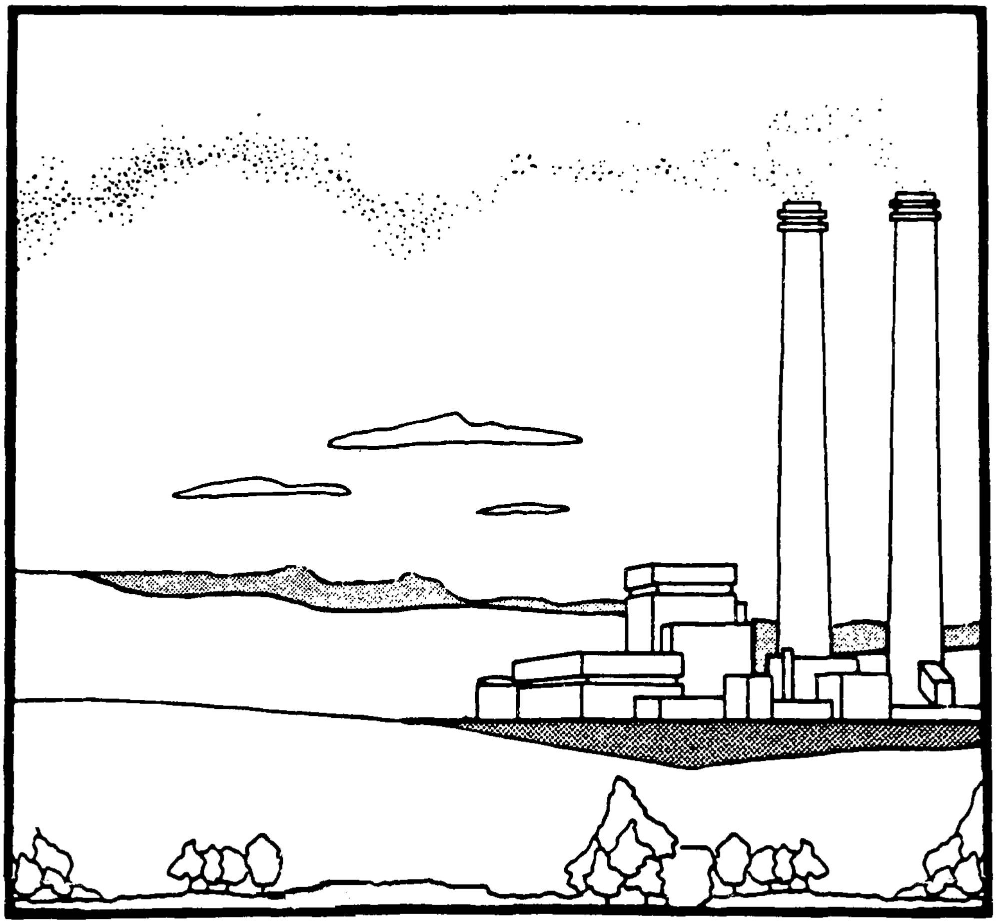
Air

APTI
Course 423
Dispersion of Air Pollution: Model Applications

Student Manual



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Course 423

Dispersion of Air Pollution--Model Applications

STUDENT MANUAL

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Notice

Although the information in this document has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement T901600 to the University of Texas at Dallas, it may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

Note From the Authors

This document is up to date as of August 1988. The policies and rules stated in this document represent the views of the authors and are not necessarily the view of the U.S. EPA. Policies and rules are likely to change in the future. Applicants are advised to contact either their state agency or the EPA regional office prior to starting a modeling project.

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I. Introduction

A. Course Name and Number

B. Organization Presenting the Course

C. Instructor Introductions and Affiliation

D. Present Course Agenda and Schedule

E. Logistical Information

F. Student Introductions

G. Course Requirements

1. Attendance 95%

2. Complete All Class Assignments On Time

3. Passing Grade - 70%

Class Participation	- 25%
Homework	- 25%
Posttest	50%

4. Course Critique Completed and Turned In

II. Course Overview

A. Lessons 1 through 3 -- Introduction and General Information

B. Lesson 4 Meteorological Data

C. Lesson 5 Introduction to Guideline Models -- Description of each of the UNAMAP models

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G. Lesson 9 Complex Terrain Modeling -- Initial screening, second-level screening, and third-level screening

H. Lesson 10 Toxic Gas Models

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J. Lesson 12 Actual Case Study -- PSD modeling for a complex industrial source

K. Lesson 13 Other Modeling Considerations and Techniques - - Fugitive emissions, gravitational settling, and velocity dependent emissions.

III. Questions

Lesson 2

The Habitat of Modeling

ESL: effective screening levels

MED: meteorological data

2/8/93

I. Importance of Modeling Results

A. Protect Public Health and Welfare

B. Ensure Consistency in Enforcing Regulations

C. Million Dollar Decisions by Industry

II. Reasons For Modeling

A. PSD Requirements

B. SIP Development (Planning) State's plan to implement Federal requirements.

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D. State and Local Permits

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F. Quick Results

G. Safe - No Actual Pollutant Release

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B. Control Technology Review

C. Class I Impacts

D. Other Impacts

- Risk analysis *.

IV. Overview of the PSD Requirement For Modeling

A. Modeling for Preconstruction Monitoring Exemption

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1. Exclude minor sources outside of applicant's radius-of-impact

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C. Criteria Pollutants

1. Increments (40CFR52 in Selected Readings)

2. Ambient Air Quality Standards

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V. State and Local Regulations and Guidelines

VI. Summary

VII. Questions

Lesson 3

Basics of Computer Modeling

I. Performing and Reviewing Modeling Results

A. Resources Needed

1. Computer System Requirements

a. Memory: 70-400 Kbytes

b. Disk: 360-1024 Kbytes

c. Printer: 132 Columns

d. Screen: 80 Column Monochrome, 132 column display preferred

2. Typical Systems Used For Modeling

a. Mainframes Computers: IBM, UNIVAC, CRAY

b. Mini-computers: DEC, IBM, Harris, Prime, DG

c. Micro-computers: IBM, Compaq, Macintosh

B. Beneficial Skills

1. Science or Engineering Background

2. Understanding of Basic Meteorology

3. Training Courses in Air Pollution

4. FORTRAN Programming

II. Overview of the Relationship of Mathematical Algorithms and Computer Models.

A. FORTRAN Source Code

B. Data Input Files

Unlimited mixing: no mixing at Hm.
limited mixing: multiple reflection at Hm

C. List Output Files (show example)

III. Comparison of Hand Calculations and Model Results

(1 source, 1 location (receptor) 1 hr data.)

given rate

Sample Source Data - $Q = 100$ g/s
$T_s = 432.$ Deg. K
$V_s = 11.7$ m/s – gas exit velocity
$D_s = 2.4$ m – inside diameter of stack
$H_s = 35.$ m

Meteorological Data - $\bar{U} = 5.0$ m/s
KST = 3 (Stability Class C)
$H_m = 5000$ m (Unlimited Mixing)
$Z_o = 10.$ m (Anemometer Height)
$T_a = 293.$ Deg. K

Urban/Rural Rural $p = 0.10$

Downwind Distance - X = 1300. m

Cross-wind Distance - Y = 0. m

A. Hand Calculations -

Wind speed extrapolated to stack height:

$$U_s = \bar{U} \left(\frac{H_s}{Z_o}\right)^P = 5.0 \left(\frac{35.}{10.}\right)^{0.10}$$ (p 6-5)

$$U_s = 5.67 \text{ m/s}$$

Plume Rise:

$$V_f = \frac{3.14}{4} V_s D_s^2 = \frac{3.14}{4} 11.7 (2.4)^2$$

$$V_f = 52.90 \text{ m}^3/\text{s} \qquad \text{(Flow Rate)}$$

$$F = \frac{g}{3.14} V_f \frac{T_s - T_a}{T_s} = \frac{9.8}{3.14} (52.90) \frac{432-293}{432}$$

$F = 53.12\ m^4/s^3$ (Buoyancy Flux)

$X_{max} = 3.5\ X^*$ Where $X^* = 14\ F^{5/8}$

$X_{max} = 3.5\ (14)\ (53.12)^{5/8}$

$X_{max} = 586.8$ m (Distance to Final Rise)

$$\text{Del H} = \frac{1.6\ F^{1/3}\ (X_{max})^{2/3}}{U_s} = \frac{1.6\ (53.12)^{1/3}\ (586.8)^{2/3}}{5.67} = \Delta h.$$

Del H = 74.4 m

$H = H_s + \text{Del H} = 35 + 74.4$

H = 109.4 m

Dispersion Coefficients: downwind distance

$sig_y = 465.1\ (X) \tan(TH)$

Where: $TH = 0.017453\ (c - d \ln x)$

$TH = 0.017453\ (12.5 - 1.0857 \ln 1.3)$

$TH = 0.2132$

$sig_y = 465.1\ (1.3) \tan(0.2132)$

$sig_y = 130.9$ m (ISC 2-28)

$sig_z = a\ X^b = 61.141\ (1.3)^{0.91465}$

$sig_z = 77.7$ m (ISC 2-29)

$$CHI = \frac{Q \times 10^6}{3.14\ sig_y\ sig_z\ U_s} EXP\left[\frac{-1}{2}\left(\frac{H}{sig_z}\right)^2\right]$$

$$CHI = \frac{100 \times 10^6}{3.14\ (130.9)\ (77.7)\ (5.67)} EXP\left[\frac{-1}{2}\left(\frac{109.4}{77.7}\right)^2\right]$$

$$CHI = 204.95\ ug/m^3$$

B. PTPLU Results

1. Input Data

2. Output Data: 204.91 ug/m^3

C. ISCST Results

1. Input Data

2. Output Data: 204.91 ug/m^3

IV. Summary

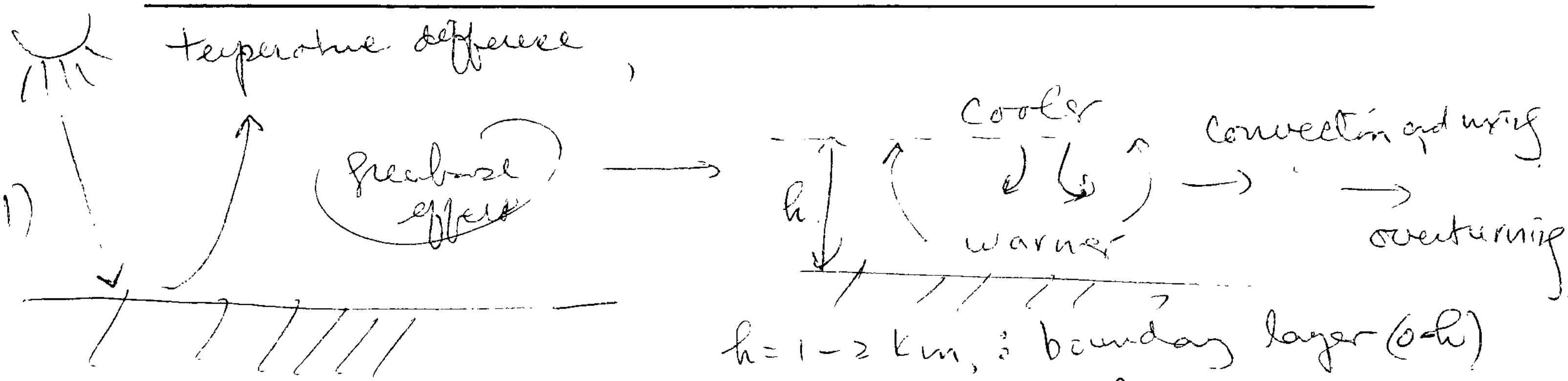
V. Questions

~~Input~~
(~~Dispersion factor~~: stability and wind speed)
emission rate factor,
receptor types:
grid cartesian:

- Area: low annual
- Location: usually are locations, out of stock.
- Incoming solar energy (Insolation)
- Sun heat energy absorbed by the earth, and reradiated heat,
- Greenhouse effect: CO, water vapor to reabsorb the heat radiated by the earth.

Lesson 4

Meteorological Data

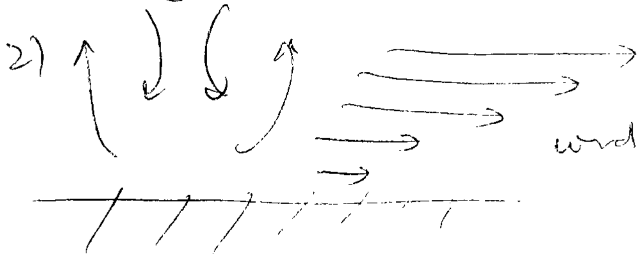


h = 1 – 2 km, : boundary layer (0–h)

- mixing height : h

* vertical ~~potential temperature profile~~ determines h.

wind speed profile,

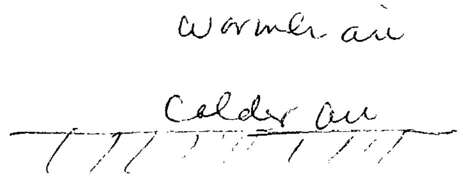


windspeed ; lower toward the ground due to friction,

wind is more gusty during the day,
calmer at night.

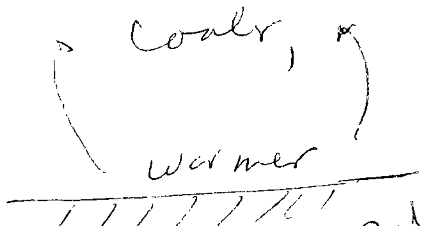
Ambient lapse rate: rate of temperature change w/s height,

e.g. clear sky
late afternoon. Sun went down,
still earth radiates the heat,
sky is clear and allows radiate heat away from the earth.
So, earth becomes cooler, but the atmosphere tends to ~~hold~~ hold more heat. So the atmosphere begins to radiate heat back to earth. And the atmosphere (near earth) gets colder.



" stable", no movement of air.
(temperature inversion)

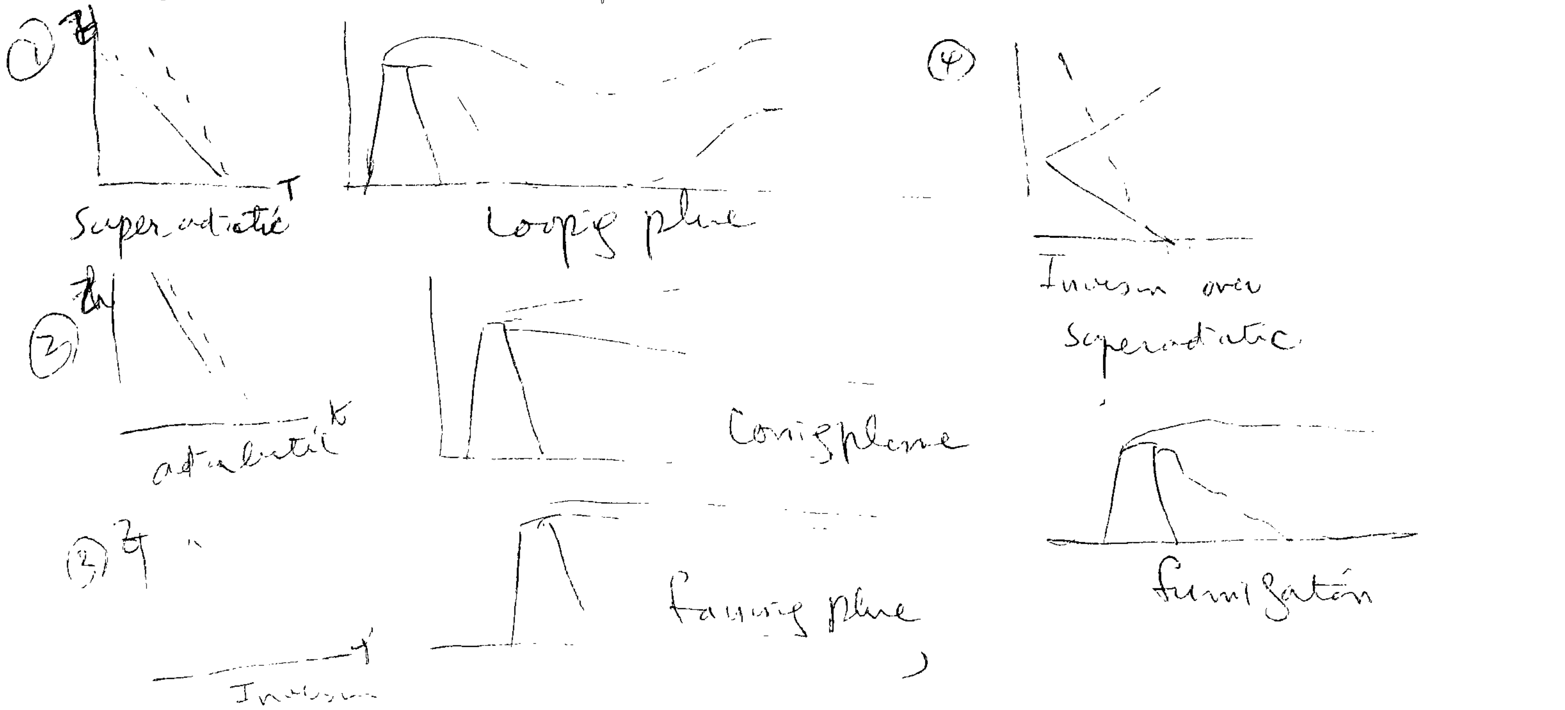
in the next morning



the steeper the lapse rate,
the less stable the atmosphere.

* Ambient parcel Adiabatic lapse rate: $-9.8^\circ C / 1 Km$.

fig 18-10 Plume shapes and atmosphere stability:



N 360 — W 270 — E 90 — S 180 — wind direction

I. Overview of Meteorological Parameters Required For Modeling.

A. Wind Speed (m/s)

B. Wind Direction (degrees azimuth) for the wind's coming (- 90°)(270°)
"wind flow vector" wind direction toward the wind. (90°)

C. Stability Class (unitless)
measurement of turbulence at lower atmosphere

D. Mixing Height (m)

E. Temperature (degrees K)

II. Hypothetical Meteorological Data: PTPLU

A. Combinations of Wind Speeds and Stability Classes

B. Show PTPLU data input and output.

III.. Hourly Data -- National Climatic Data Center — only one source
(automated observation) weather ser. center.

A. Raw Surface Data

Parameter	Columns	Format	Description
ID	1- 5	I5	Station Number
IYEAR	6- 7	I2	Year
IMONTH	8- 9	I2	Month
IDAY	10-11	I2	Day of Month
IHOUR	12-13	I2	Hour
ICEIL	14-16	3A1	Ceiling Height (100s of feet)
IDIR	39-40	22X,I2	Wind Direction (tens of degrees from N.)
ISPEED	41-42	I2	Wind Speed (knots)
ITEMP	47-49	4X,I3	Temperature (deg F)
→ ICOVER	79	29X,A1	Fraction of Opaque Sky Cover (1=10%, 2=20%...-=100%)

Stability Class:
A(1) - very unstable.
B(2) - unstable,
C (3) [illegible]
D [illegible]

E(5) - slightly stable
F(6) - stable
G(7) - very stable.

B. Mixing Heights (m)

Parameter	Columns	Format	Description
XMNM1	13-17	12X,F5.0	Morning Mixing Height
XAFM1	31-35	13X,F5.0	Afternoon Mixing Ht.

C. Preprocessor Data Input

1. Preprocessor Initialization Card

Parameter	Columns	Format	Description
IDC	1- 5	I5	Surface Station No.
IYRC	6- 7	I2	Year
ALAT	9-18	1X,F10.1	Latitude (nearest hundredth)
ALONG	19-28	F10.1	Longitude (nearest hundredth)
ZONE	29-30	F2.0	Time Zone (5=EST, 6=CST,..8=PST)
NDAYS	31-34	I4	365 or 366 Leap Year

2. Show Typical Input Files

D. Demonstration of CRSMET (RAMMET) — ① input conversion then ② calculates hourly Stability Class based on cloud cover, ceiling heights, wind speed

E. Preprocessor Output File

1. Method of Checking (Unformatted) Binary Data

2. Hard Copy of Preprocessed Data

3. Show Typical Output Files

then ③ linear interpolation of hourly mixing heights from twice daily mixing values modified by stability category for rural and urban values

IV. Hourly Data -- On-site Data

A. As a minimum, on-site data must include wind speed, wind direction and temperature. All recorded at a height of 10 meters or stack top for complex terrain.

B. The preferred method includes recording transport wind speed and direction at stack height if greater than 10 meters.

C. Methods of determining stability classes listed in order of preference are:

1. Turner's 1964 method of subjective evaluation using cloud cover, ceiling height, and insolation observed at the site, and recorded wind speeds.

2. Record $sigma_E$ (vertical wind direction fluctuations) or calculate $sigma_E$ from recorded values of $sigma_W$ (vertical wind speed fluctuations) and determine stability class according to Tables 9-2, 9-3, and 9-4.

3. Record $sigma_A$ (horizontal wind direction fluctuations) and determine stability class according to Tables 9-2, 9-3, and 9-4.

4. Turner's 1964 method using values recorded at a nearby NWS station along with wind speeds record at the site.

D. Using NCDC Mixing Height Data With On-site Data

V. Calm Wind Speeds (When the Wind Is Not Blowing, Which Way Is It Coming From?)

A. NWS Data -- The preprocessor program sets all calm hours to a wind speed of 1.00 meters per second and the wind direction to the previous hour's direction.

B. On-Site Data -- All wind speeds less than the instrument's threshold are treated as above. Wind speeds above the threshold and less than 1.00 meters per second are set to 1.00 meters per second and the recorded direction is retained. Rammet sets it to be to the previous hour.

VI. Requirements to Move Binary Data From One Computer System to Another System

A. Converting Data From Binary to Character Format RAMMET: Fortran IV

B. Moving Character Data From One System to Another

C. Converting Data From Character Format to Binary

If wind speed < 1. m/s → set it to 1 m/s else use actual wind speed.

STAR: Stability array — wind speed category (6), wind direction sectors (16), Stability class (6)

D. Importance of Significant Digits (B, NWE, 3)

total 576 cases.

VII. Long-term Data: STAR Summaries -- Joint frequency distribution of wind-speed class, wind-direction sector, and stability class

frequency = N events

% frequency = $\frac{N \times 100}{8760}$

A. Annual Multiple Years

B. Annual - Single Year

C. Seasonal

D. Quarterly

E. Monthly

VIII.. Sources of Data: Local and State Agencies, National Climatic Data Center

A. How to Order Meteorological Data From NCDC

1. Address and Phone:

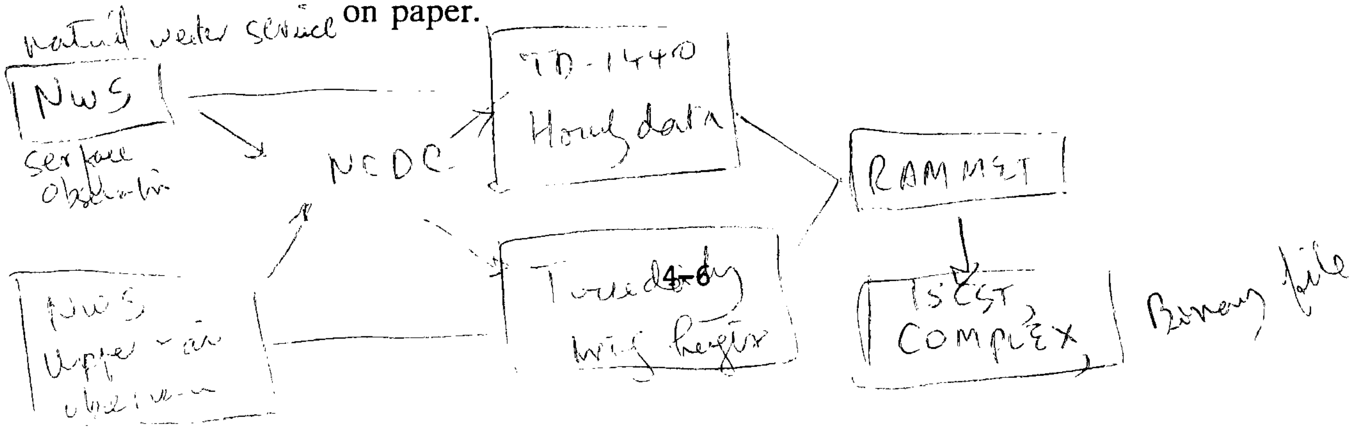
National Climatic Data Center
Federal Building
Asheville, NC 28801-2696

Phone: 704/259-0682

2. Hourly Data Format:

- Request surface data format "TD1440" card image
- Request mixing height data format "TD9689" card image
- Data is available on either 9-track magnetic tape or IBM-PC 5.25" floppy diskettes

3. STAR Summary - Available on tape or diskette (format "TD9773"), and on paper.



4. Typical costs for 5-years of data from NCDC

   - Surface data: $ 110 9-track tape, $ 355 floppy
   - Mixing heights (not previously run): $ 325 tape
   - STAR Summary: $ 50 - 100 (Existing Summaries)

B. Data Requested From Agencies Data must be converted to a compatible format prior to transmittal.

IX. Summary

X. Questions

Data. ① hypothetical data
② hourly (short term data)
③ star (stability) - avail - data

① hypothetical data — screening data.
combination of wind speed and stability class combination, (33 combinations)

Stability class	1	2	3	4	5	8	10	15	20
	10 m wind speed ~~(m/s)~~								
A	o	o	o						
B	o	o	o	o	o				
C	o	o	o	o	o	o	o		
D	o	o	o	o	o	o	o	o	o
E	o	o	o	o	o				
F	o	o	o	o					

② short term data,

Alteration permit:
worst case,
maximum 1 hr average

hourly data

8hr average:	"good"	"calm"	
	7	1	$\frac{\Sigma 7}{7}$
	6	2	$\frac{\Sigma 6}{6}$
	5	3	$\frac{\Sigma 5}{6}$ 75%

24hrs

(2) Stability Classification criteria

Surface wind speed (knots)	Daytime insolation: Strong	moderate	slight	weak	Overcast or neutral	Night time: >5/10 cloud	<5/10 cloud
<1	1	1	2	3	4	6	7
2		2	2	3	4	6	7
			2	3	4	6	7
3	1	2	3	4	4		6
4	1	2	3		4	5	6
5	1	2	3		4	5	6
6	2	2	3		4	5	5
7	2	2	3		4	4	5
8	2	3			4	4	5
9	3	3	4		4	4	
10		3			4	4	4
11	3	3	4		4	4	4
	3	4	4				

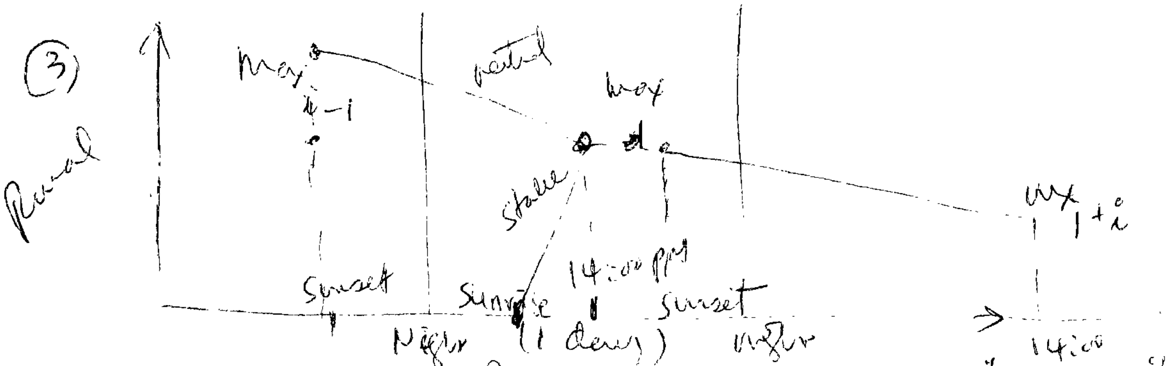
UNST

Stable

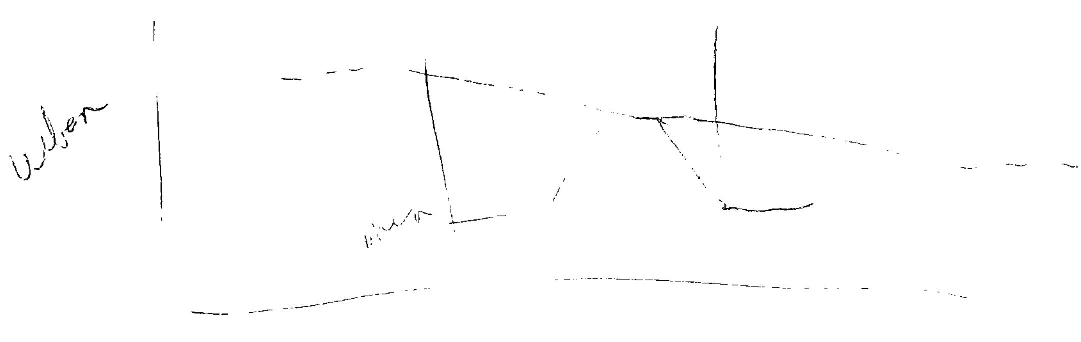
night time: 1 hr before sunset

day time: 1 hr after sunset

(3)



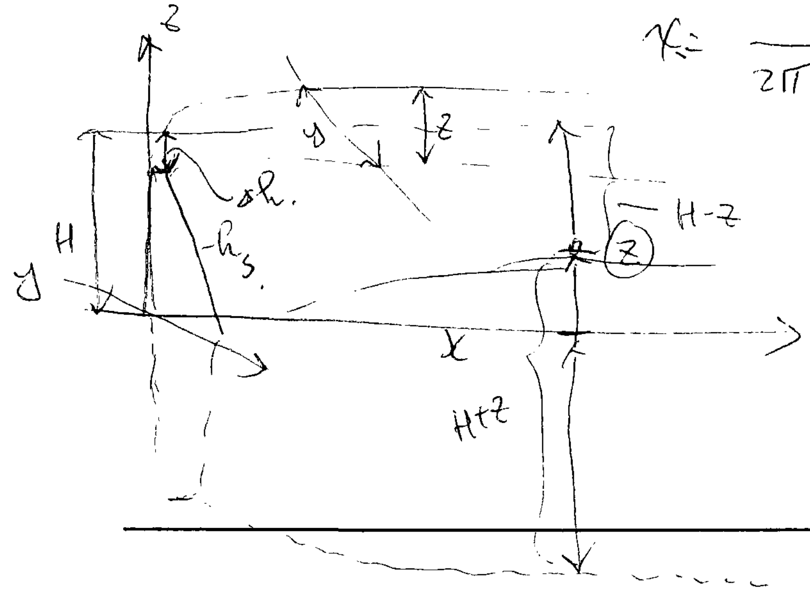
determining hourly mixing heights by "CRSTER" model



Gaussian distribution:

x: direction of wind:

$$\chi = \frac{Q}{2\pi \sigma_y \sigma_z u} e^{-\frac{1}{2}\left(\frac{y}{\sigma_y}\right)^2}\left[e^{-\frac{1}{2}\left(\frac{H-z}{\sigma_z}\right)^2} + k e^{-\frac{1}{2}\left(\frac{H+z}{\sigma_z}\right)^2}\right]$$



χ: concentration

Q: g/second: mass released by second (vertical) (emission rate)

u: wind speed at point source.

σ_y, σ_z: standard deviation.

z: receptor ~~dist~~ height.

Lesson 5

Guideline Models

where, $e^{-\frac{1}{2}\left(\frac{y}{\sigma_y}\right)^2} = \frac{1}{e^{\frac{1}{2}(y/\sigma_y)^2}}$,

if $y=0 \rightarrow 1$,

if $y=\infty \rightarrow 0$

if $y=-\infty \rightarrow 0$

k: reflection coefficient, ($k=0$ if no reflection)

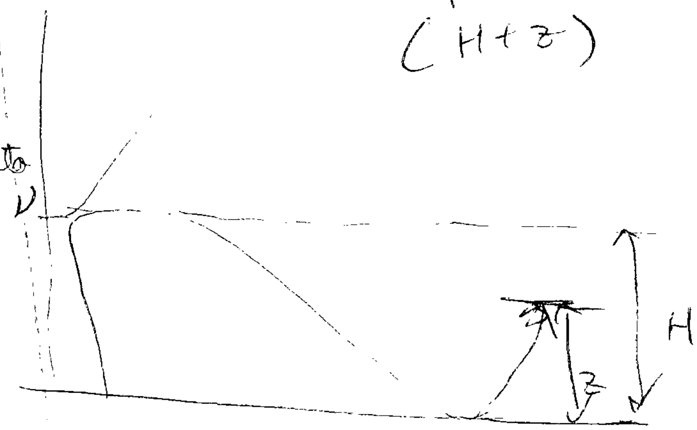
(reflective source)

to accommodate the plume touching the ground and the reflected back to the receptor ($H+z$)

Steady state assumption:

no change in time,

* Steady state model: ~~to~~ use 1 hr data, every hr doesn't depend on preceding or following data.



D. height: 100 m — 1 Km

when $u \Rightarrow 0$: equation is not valid. ~~*~~ $U_{min}=1$.

I. Overview of the Guideline on Air Quality Models document

A. Contents of the Guideline Document

1. Introduction

2. Overview of Model Use

3. Recommended Air Quality Models

4. Simple-Terrain Stationary-Source Models

5. Model Use in Complex Terrain

6. Models for Ozone, Carbon Monoxide and Nitrogen Dioxide

7. Other Model Requirements

8. General Modeling Considerations

9. Model Input Data

10. Accuracy and Uncertainty of Models

11. Regulatory Application of Models

12. References

13. Bibliography

14. Glossary of Terms

Appendices

II. Model Selection Criteria

A. Meteorological and Topographic Complexities

B. Level of Detail and Accuracy Needed

C. Technical Competence of Modelers

D. Resources Available

E. Detail and Accuracy of Available Data

III. Levels of Sophistication of Models

A. Screening Models

B. Refined Models

C. Preferred Models (see table next page)

IV. Site-specific Models

\. Use of Alternative Models

1. Interim Procedures for Evaluating Air Quality Models, (Revised) EPA-450/4-84-023.

2. Model Equivalency

3. Statistically Superior to Guideline Model

4. No Appropriate Guideline Model

B. Supplementary Modeling Guidance

1. Local and State Agencies

2. EPA Regional Office

3. EPA RTP

V. Summary

VI. Questions

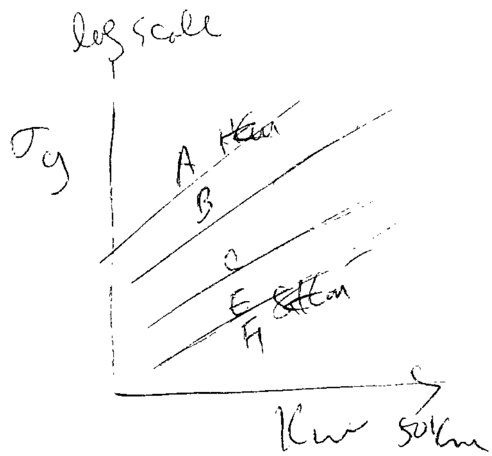
PREFERRED MODELS -- SIMPLE TERRAIN

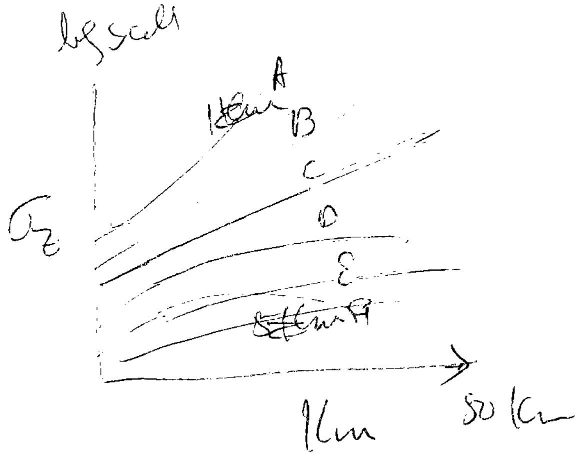
Short-term (1-24 hours)	Land Use	Model
Single Source	Rural	CRSTER
	Urban	RAM
Multiple Source	Rural	MPTER
	Urban	RAM
Complicated Sources	Rural/Urban	ISCST
Buoyant Line Sources	Rural	BLP

Long-term (Monthly, Seasonal or Annual)		
Single Source	Rural	CRSTER
	Urban	RAM
Multiple Source	Rural	MPTER
	Urban	CDM2.0 or RAM
Complicated Sources	Rural/Urban	ISCLT
Buoyant Line Sources	Rural	BLP

Lesson 6

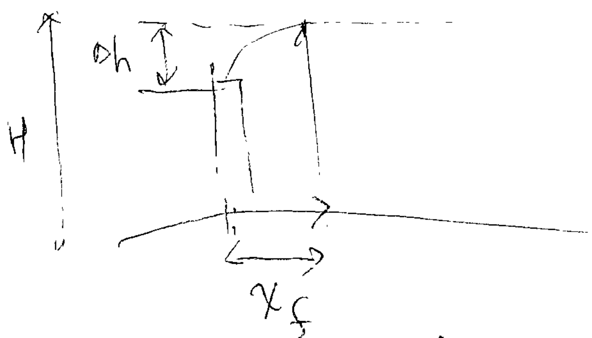
Model Options





Briggs' Plume Rise :

- V_f : volumetric flow rate,
- F_i : Buoyance flux
- x^*
- x_f = distance ~~down~~ to the final value plume rise,



Δh : plume rise
H - physical plume height.

u : wind speed at stack height.

I. Introduction and Overview of Model Options.

II. Identifying Rural/Urban Areas--Methods of Auer

   A. Land Use Within Three Kilometers

   B. Differences in Sigma Values

   C. Rural/Urban Mixing Heights

   D. Effect On Modeled Concentrations

      1. Urban coefficients increase concentrations from elevated sources.

      2. Rural coefficients increase concentrations from ground-level sources.

      3. Show ISCST screening results.

         Maximum occurs nearer source

         - Concentration at 1300 m is less than one-half of Base Case

III. Gradual Plume Rise

   A. Complex Terrain

   B. Building Downwash

   C. Example - Unstable Buoyant Rise

$$H = H_s + (160\ F^{1/3}\ X^{2/3})/U_s$$

   D. Show ISCST Screening Results.

      - No change at distances greater than 700 m

      - Significant increases at 500 m and nearer

IV. Buoyancy-Induced Dispersion

A. Turbulent Plume Entrainment

B. Equation:

$$sig_{ze} = [\ sig_z^2 + (del\ H/3.5)^2\ ]^{1/2}$$

$$sig_{ye} = [\ sig_y^2 + (del\ H/3.5)^2\ ]^{1/2}$$

Where: sig_{ye} and sig_{ze} are enhanced coefficients
del H is either momentum or buoyancy plume rise

C. Show ISCST Screening Results.

Concentrations are higher at 2000 m and nearer

- Concentrations are lower at 2000 m and farther

V. Stack-tip Downwash

A. Reduces Effective Stack Height for $V_s < 1.5\ U_s$

B. Equation:

$$H = H_s + 2D_s\ [(V_s/U_s) - 1.5] \qquad \text{For } V_s < 1.5\ U_s$$

No change in h if $V_s \geq 1.5\ U_s$

C. Show ISCST Screening Results.

- No change in concentrations because: $V_s > 1.5\ U_s$

VI. Vertical Potential Temperature Gradient

dtheta/dz = 0. for A-D, 0.20 for E and 0.35 for F

VII. Wind-profile Exponents

A. Rural/Urban Values

	Stability Classes					
	A	B	C	D	E	F
Rural	0.07,	0.07,	0.10,	0.15,	0.35,	0.55
Urban	0.15,	0.15,	0.20,	0.25,	0.30,	0.30

B. Equation:

$$\bar{U}_s = U\ (H_s/Z_o)^p$$

C. See Rural/Urban ISCST Screening Results.

VIII. Pollutant Half-life

A. $D = EXP\ (-\ PSI\ X/U_s)$

D - Decay Term; PSI - Decay Coefficient (sec^{-1})
X - Downwind Distance; U_s - Wind Speed at Stack Height

B. Example:

$PSI = 0.693/T_h$ Where: T_h Is Pollutant Half-Life.

For SO_2 In Urban Areas Use T_h of four hours or:

$PSI = 0.000048\ sec^{-1}$

C. Show ISCST Screening Results.

- Using a half-life equal to the travel time to 2000 m gives:

$$PSI = 0.693/(2000/5.67) = 0.001965\ sec^{-1}$$

- Concentration at 2000 m is one half of Base Case

- Concentrations at distances greater than 2000 m are less than one half

- Concentrations at nearer distances are greater than one-half but lower than Base Case

IX. Summary

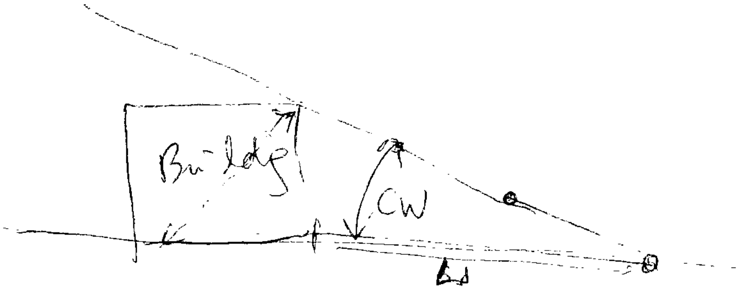
XI. Questions

Lesson 7

GEP and Building Downwash

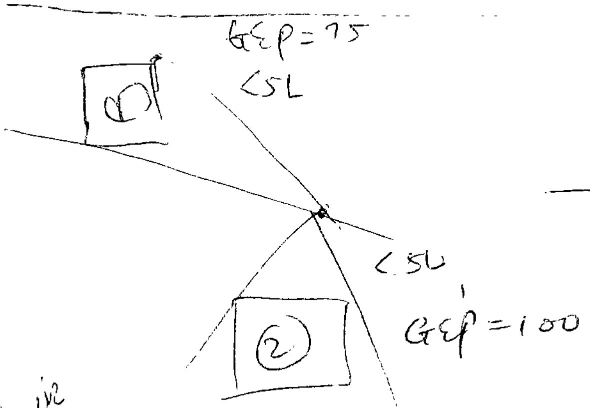
(good engineering practice),

aerodynamic effect in modeling equation.



CW = maximum cross wind dimension,

L



→ then GEP=100,

stack #

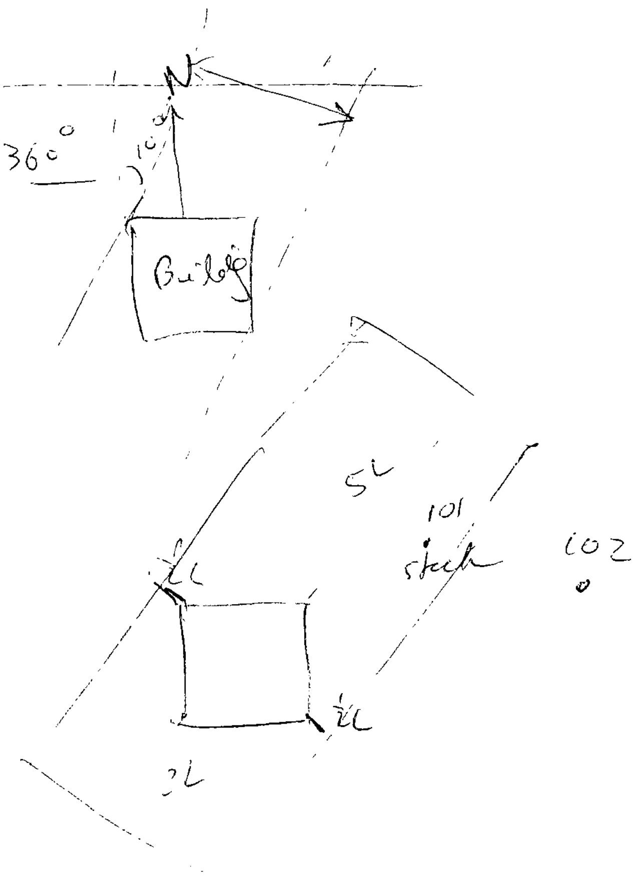
ISCST 10° 20° 30° - - 360°

101 BH 10° HB

BW 10° CWD.

102 BH 0

BW 0



Building Height = Bildg height − stack height
= Stack-based height

I. Overview

A. Regulatory Requirements

B. Modeling Requirements

1. Huber-Snyder ($H_b + 0.5L < H_s < H_b + 1.5L$)

2. Schulman-Scire ($H_s < H_b + 0.5L$)

II. Determining GEP

A. Definition (40CFR51.1) to get rid of aer dynamic effect.

Good engineering practice (GEP) stack height means the greater of:

Crosswind length = proj width ≈ bldg width

(1) 65 meters; or (2) $H_g = H + 1.5\ L$

where: H_g = Good engineering practice stack height
H = Height of nearby structure
L = Lesser dimension (height or projected width) of structure

Nearby is that distance up to five times the lesser of the height or the width dimension of the structure but not greater than 0.8 km.

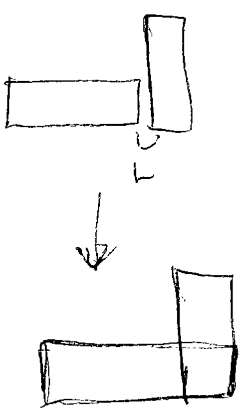
5L of nearby building.

B. Guideline for Determination of Good Engineering Practice Stack Height

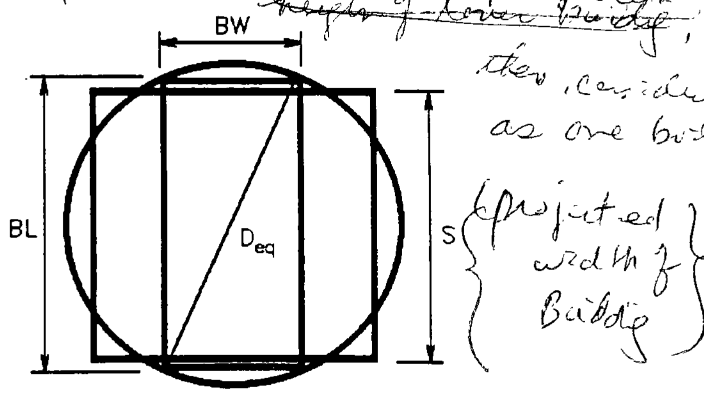
1. Simple building

2. Multi-level building

projected h is lower than the ~~height of lower building~~ projected width, then considered as one building



3. Multiple buildings -- If the separation between two buildings is less than the characteristic dimension of either building, treat the gap between the two buildings as if it was filled by a structure equal to the height of the shorter building. (GEP Document, pg. 43)



III. Modeling Building Downwash -- ISCST and ISCLT

A. Huber-Snyder

1. Wind-tunnel -- Model height was one-half its width.

2. Algorithm

Example Equation - sig_z' For Squat Buildings

$sig_z' = 0.7\ h_b + 0.067\ (X-3h_b)$ For $3h_b < X < 10h_b$

$sig_z' = sig_z$ at X plus X_z For $X > 10h_b$

Where: X_z is the downwind distance that gives a sig_z value equal to sig_z' at $10h_b$

3. Both sig_z and sig_y are modified when $H_m < 1.2\ h_b$ otherwise only sig_z is modified

B. Schulman-Scire

1. Direction specific building parameters.

2. Modified plume rise

3. Linear decay factor A

Industrial source complex

IV. Show ISCST Screening Results -- Tables 7.1 through 7.4

- Concentrations for Schulman-Scire downwash are greater at all downwind distances than either Huber-Snyder or the Base Case.

- Concentrations at distances less than 2000 meters are greater for Huber-Snyder than the Base Case, beyond 2000 meters the Base Case is greater than Huber-Snyder

- The differences between the three examples are less than 10 percent at distances greater than 4000 meters.

- The concentrations at 1300 meters (same distance as in Lesson 3) are significantly greater for both Huber-Snyder and Schulman-Scire downwash.

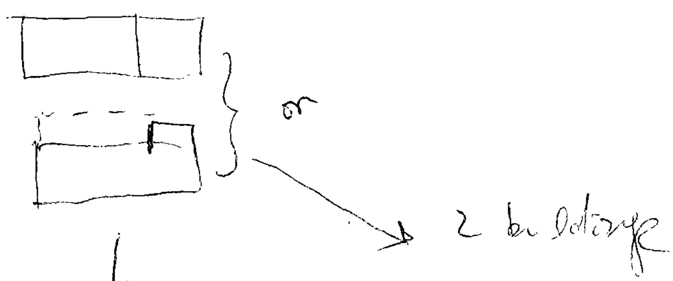
Comparison of Schulman-Scire Downwash
With Huber-Snyder Downwash

Downwind Distance (m)	Schulman-Scire (ug/m³)	Huber-Snyder (ug/m³)	Base Case (ug/m³)
50.0	.000000	.000000	.000000
100.0	669.512800	296.956600	.000000
300.0	490.514500	234.893600	.004107
500.0	364.432400	178.490100	10.669960
700.0	379.127400	205.062800	78.896310
1000.0	385.033500	243.596600	179.583700
1300.0	320.961900	227.142500	204.911900
1500.0	277.511000	207.190300	198.352600
2000.0	193.497500	157.818100	160.514600
2500.0	139.993700	120.253300	124.413800
3000.0	105.416600	93.595460	97.254520
3500.0	82.130690	74.579830	77.496480
4000.0	65.798650	60.718340	62.997090
5000.0	45.044780	42.454870	43.867640
7000.0	25.102600	24.178800	24.805540
10000.0	13.373720	13.065490	13.313800

V. Summary

VI. Questions

Intertwined Structure :



If
a stack in B → B data,
a stack in A → A data,
a stack in A and B →
choose higher value.

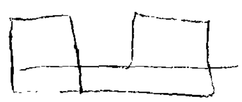


Table 7.1 ISCST Input Data Huber-Snyder Example

```
Class Example
 1 1 1 0 0 1 1 0 0 0 0 0 0 0 0 0 1 1 2 0 1 1 0 1 1 2 2 2 2 2 0
    1     0     0    16     0     0     1     1
50              0.
100.            0.
300.            0.
500.            0.
700.            0.
1000.           0.
1300.           0.
1500.           0.
2000.           0.
2500.           0.
3000.           0.
3500.           0.
4000.           0.
5000.           0.
7000.           0.
10000.          0.

                                                             5 3
  10100 00100.0000                                35.  432.  11.7   2.4  30.522.95322.953
       1 90.0000  5.000010000.00  293.00 .000000         3 .000000.0000000
```

Table 7.2 ISCST Output Huber-Snyder Example

*** Class Example ***

REG. DEFAULT OPTION CHOSEN (YES=1,NO=2) ISW(28) = 2

*** Class Example ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 (GRAMS/SEC) TYPE=2 (GRAMS/SEC) *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
101	0	0	0	.10000E+03	.0	.0	.0	35.00	432.00	11.70	2.40	30.50	22.95	22.95

*** Class Example ***

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 001 METERS OR THREE BUILDING HEIGHTS IN DISTANCE. NO AVERAGE CONCENTRATION IS CALCULATED *

SOURCE NUMBER	- - RECEPTOR LOCATION - - X OR RANGE (METERS)	Y (METERS) OR DIRECTION (DEGREES)	DISTANCE BETWEEN (METERS)
101	50.0	.0	50.00

HIGH
1-HR
SGROUP# 1

*** Class Example ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,HOUR)	- X -	- Y -	CON.	(DAY,HOUR)
50.0	.0	.00000	(0, 0)	100.0	.0	296.95660	(1, 1)
300.0	.0	234.89360	(1, 1)	500.0	.0	178.49010	(1, 1)
700.0	.0	205.06280	(1, 1)	1000.0	.0	243.59660	(1, 1)
1300.0	.0	227.14250	(1, 1)	1500.0	.0	207.19030	(1, 1)
2000.0	.0	157.81810	(1, 1)	2500.0	.0	120.25330	(1, 1)
3000.0	.0	93.59546	(1, 1)	3500.0	.0	74.57983	(1, 1)
4000.0	.0	60.71834	(1, 1)	5000.0	.0	42.45487	(1, 1)
7000.0	.0	24.17880	(1, 1)	10000.0	.0	13.06549	(1, 1)

Table 7.3 ISCST Input Data Schulman-Scire Example

```
Class Example
 1 1 1 0 0 1 1 0 0 0 0 0 0 0 0 0 1 1 2 0 1 1 0 1 1 2 2 2 2 2 0
     1     0     0    16     0     0     1     1
50              0.
100.            0.
300.            0.
500.            0.
700.            0.
1000.           0.
1300.           0.
1500.           0.
2000.           0.
2500.           0.
3000.           0.
3500.           0.
4000.           0.
5000.           0.
7000.           0.
10000.          0.
                                                                5 3
  10100 00100.0000                     35.  432.  11.7   2.4 -30.522.95322.953
  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9
  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9
  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9  25.9
       1 90.0000  5.000010000.00  293.00 .000000       3 .000000.0000000
```

Table 7.4 ISCST Output Schulman-Scire Example

REG. DEFAULT OPTION CHOSEN (YES=1,NO=2) ISW(28) = 2

*** Class Example ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 (GRAMS/SEC) TYPE=2 (GRAMS/SEC) *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
101	0	0	0	.10000E+03	.0	.0	.0	35.00	432.00	11.70	2.40	-30.50	22.95	22.95

*** Class Example ***

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE 1

IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE
1	30.5,	25.9,	0	2	30.5,	25.9,	0	3	30.5,	25.9,	0	4	30.5,	25.9,	0	5	30.5,	25.9,	0	6	30.5,	25.9,	0
7	30.5,	25.9,	0	8	30.5,	25.9,	0	9	30.5,	25.9,	0	10	30.5,	25.9,	0	11	30.5,	25.9,	0	12	30.5,	25.9,	0
13	30.5,	25.9,	0	14	30.5,	25.9,	0	15	30.5,	25.9,	0	16	30.5,	25.9,	0	17	30.5,	25.9,	0	18	30.5,	25.9,	0
19	30.5,	25.9,	0	20	30.5,	25.9,	0	21	30.5,	25.9,	0	22	30.5,	25.9,	0	23	30.5,	25.9,	0	24	30.5,	25.9,	0
25	30.5,	25.9,	0	26	30.5,	25.9,	0	27	30.5,	25.9,	0	28	30.5,	25.9,	0	29	30.5,	25.9,	0	30	30.5,	25.9,	0
31	30.5,	25.9,	0	32	30.5,	25.9,	0	33	30.5,	25.9,	0	34	30.5,	25.9,	0	35	30.5,	25.9,	0	36	30.5,	25.9,	0

*** Class Example ***

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 001 METERS OR THREE BUILDING HEIGHTS IN DISTANCE. NO AVERAGE CONCENTRATION IS CALCULATED *

SOURCE NUMBER	- - RECEPTOR LOCATION - - X OR RANGE (METERS)	Y (METERS) OR DIRECTION (DEGREES)	DISTANCE BETWEEN (METERS)
101	50.0	.0	50.00

Table 7.4 ISCST Output Schulman-Scire Example (cont.)

HIGH
1-HR
SGROUP# 1

*** Class Example ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,HOUR)	- X -	- Y -	CON.	(DAY,HOUR)
50.0	.0	.00000	(0, 0)	100.0	.0	669.51280	(1, 1)
300.0	.0	490.51450	(1, 1)	500.0	.0	364.43240	(1, 1)
700.0	.0	379.12740	(1, 1)	1000.0	.0	385.03350	(1, 1)
1300.0	.0	320.96190	(1, 1)	1500.0	.0	277.51100	(1, 1)
2000.0	.0	193.49750	(1, 1)	2500.0	.0	139.99370	(1, 1)
3000.0	.0	105.41660	(1, 1)	3500.0	.0	82.13069	(1, 1)
4000.0	.0	65.79865	(1, 1)	5000.0	.0	45.04478	(1, 1)
7000.0	.0	25.10260	(1, 1)	10000.0	.0	13.37372	(1, 1)

Lesson 8

Simple Terrain Modeling

8.1 Introduction

I. Definition of Simple Terrain:

Simple terrain is considered to be an area where terrain features are all lower in elevation than the top of the stack of the source(s) in question.

(GAQM 4-1)

II. Simple Terrain Models -- General

A. Usage

The simple terrain Guideline models are to be used to determine the impacts from stationary sources for the criteria pollutants, except ozone. Model evaluation exercises have been conducted to determine the "best, most appropriate point source model" for use in simple terrain. No one model has been determined to be clearly superior. Based on past use and public familiarity, CRSTER remains the recommended model for rural, simple terrain, single point source applications.

B. Preferred Models

All of the preferred models are steady state, Gaussian dispersion models designed to calculate concentrations from point sources. Each of the short-term models are capable of calculating highest and highest-second high concentrations at each receptor for 1-hour, 3-hour, 8- hour, 24-hour, and annual averaging times. The long- term models can calculate concentrations for monthly, seasonal, quarterly, annual, and multiple year averaging periods. The short-term models read meteorological data from a binary file created by the RAMMET preprocessor program. Long-term models use STAR Summaries that are entered as part of their input data file. The simple terrain models allow receptor heights up to stack height. The additional features and limitations are listed below.

PREFERRED MODELS

Short-term (1-24 hours)	Land Use	Model
Single Source	Rural	CRSTER
	Urban	RAM
Multiple Source	Rural	MPTER
	Urban	RAM
Complicated Sources	Rural/Urban	ISCST
Buoyant Line Sources	Rural	BLP

Long-term (Monthly, Seasonal or Annual)	Land Use	Model
Single Source	Rural	CRSTER
	Urban	RAM
Multiple Source	Rural	MPTER
	Urban	CDM2.0 or RAM
Complicated Sources	Rural/Urban	ISCLT
Buoyant Line Sources	Rural	BLP

ACCEPTABLE MODEL USE

		----------- Sources -------------					
Model	Rural/ Urban	Single	Multiple	Complicated	Buoyant Line	Short-term	Long-term
CRSTER	R/U	X				X	X
MPTER	R/U	X	X			X	X
RAM	R/U	X	X			X	X
BLP	R	X	X		X	X	X
ISCST	R/U	X	X	X		X	X
ISCLT	R/U	X	X	X			X
CDM2.0	U	X	X				X

III. Simple Terrain Models -- Specific Models
(From file 1 on UNAMAP-6 tape)

A. CRSTER

This algorithm estimates ground-level concentrations resulting from up to 19 collocated elevated stack emissions for an entire year and prints out the highest and second-highest 1-hr, 3-hr, and 24-hr concentrations as well as the annual mean concentrations at a set of 180 receptors (5 distances by 36 azimuths).

The algorithm is based on a modified form of the steady-state gaussian plume equation which uses either Pasquill-Gifford or Briggs urban dispersion coefficients and includes adjustments for plume rise and limited mixing. Terrain adjustments are made as long as the surrounding terrain is physically lower than the lowest stack height input.

Pollutant concentrations for each averaging time are computed for discrete, non-overlapping time periods (no running averages are computed) using measured hourly values of wind speed and direction, and estimated hourly values of atmospheric stability and mixing height.

CRSTER is the simplest of the preferred models. This model is the smallest and fastest of the short-term models. It is limited to 19 collocated sources. CRSTER analyzes 180 receptors arranged on five rings and 36 radials. The sources are located at the center of this polar receptor grid.

B. MPTER

MPTER is a multiple point-source gaussian model with optional terrain adjustment. MPTER estimates concentrations on an hour-by-hour basis for relatively inert pollutants (i.e., SO_2 and TSP). MPTER uses Pasquill-Gifford rural or Briggs urban dispersion parameters and Briggs plume rise methods to calculate the spreading and the rise of plumes.

The model is most applicable for source-receptor distances less than 10 kilometers and for locations with level or gently rolling terrain. Terrain adjustments are restricted to receptors whose elevation is no higher than the lowest stack top. In addition to terrain adjustments, options are also available for wind profile exponents, buoyancy induced dispersion, gradual plume rise, stack downwash, and plume half-life.

C. RAM

This short-term gaussian steady-state algorithm estimates concentrations of stable pollutants from urban point and area sources. Hourly meteorological data are used. Hourly concentrations and averages over a number of hours can be estimated. Briggs plume rise is used. RAM uses the Pasquill-Gifford rural or Briggs urban dispersion parameters.

Concentrations from area sources are determined using the method of Hanna, that is, sources directly upwind are considered representative of area source emissions affecting the receptor. Special features include determination of receptor locations downwind of significant sources and determination of locations of uniformly spaced receptors to ensure good area coverage with a minimum number of receptors.

D. ISCST

The industrial source complex short-term model is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex in either rural or urban settings. This model can account for settling and dry deposition of particulates, downwash, area, line and volume sources, plume rise as a function of downwind distance, separation of point sources, and limited terrain adjustment. Average concentration or total deposition may be calculated in 1, 2, 3, 4, 6, 8, 12 and/or 24-hour time periods. An N-day average concentration (or total deposition) over the total number of hours may also be computed.

E. ISCLT

~~The~~ Industrial Source Complex Long Term model is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex in either rural or urban settings. This model can account for settling and dry deposition of particulates, downwash, area, line and volume sources, plume rise as a function of downwind distance, separation of point sources, and limited terrain adjustment.

ISCLT is designed to calculate the average seasonal and/or annual ground-level concentration or total de[illegible]ition from multiple continuous point, volume and/or area sources. Provision is made for special discrete x, y receptor points that may correspond to sampler sites, points of maxima, or special points of interest. Sources can be positioned anywhere relative to the grid system.

F. BLP

BLP (Buoyant Line and Point source dispersion model) is a Gaussian plume dispersion model designed to handle unique modeling problems associated with aluminum reduction plants in rural areas, and other industrial sources where plume rise and downwash effects from stationary line sources are important. POSTBLP and BLPSUM are related postprocessors in this system.

G. CDM2.0

CDM-2.0 (Climatological Dispersion Model - version 2.0) determines long-term (seasonal or annual) quasi- stable pollutant concentrations in rural or urban settings using average emission rates from point and area sources and a joint frequency distribution of wind direction, wind speed, and stability.

The gaussian plume hypothesis forms the basis for the calculations. Contributions are calculated assuming the narrow plume hypothesis, and involve an upwind integration over the area sources. Computations can be made for up to 200 point sources and 2500 area sources at an unlimited number of receptor locations.

The number of point and area sources can be easily modified within the code. CDM-2.0 is an enhanced version of CDM and includes the following options: 16 or 36 wind-direction sectors, initial plume dispersion, buoyancy-induced dispersion, stack-tip downwash, and gradual (transitional) plume rise. The user has a choice of seven dispersion parameter schemes. Optional output includes point and area concentration roses and histograms of pollutant concentration by stability class.

IV. Summary

Control Cards

Source card (CO)

V. Questions

ISC Input:

- ~~STARTING~~
- Flagpole: height of receptor for the ground
- Elevation level: level of ground

Location:

- Source Type: P, V, A
- X, Y, Z.

multiple stacks:

About 100 m apart
Similar parameters] — merging →

- Stack height 80% each other,
- Calculate for each stack merging parameter

$$M = \frac{h_s V T_s}{Q}$$

V: volumetric flow rate $= \frac{\pi}{4} V_s d^2$

Q: mass rate of emission

lowest M representive stack.

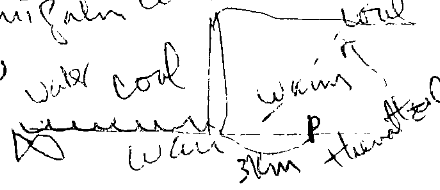
add all Q as if all plume coming out of the representative stack.

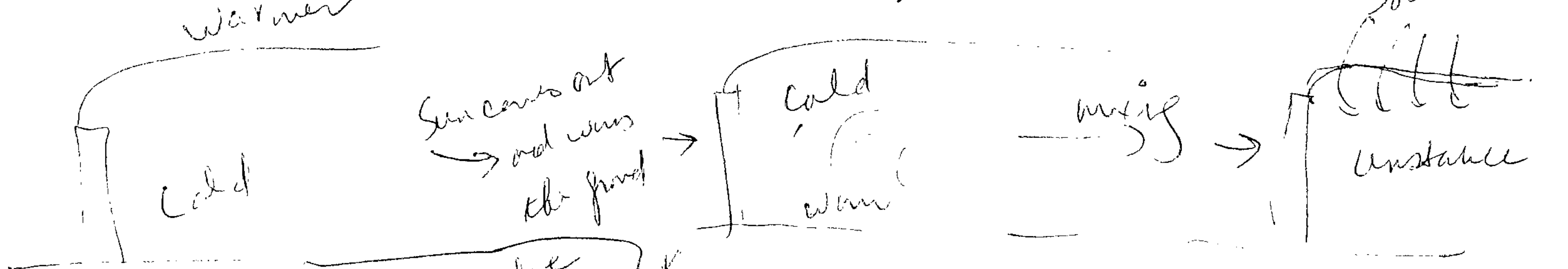
higher stack (i.e. higher Q) gives lowest M value.
∴ merges all emission into the higher stack.

---

fumigation: < Inversion fumigation: rural area only, $h_s > 10$ m
Shore-line fumigation: cool within 3 km,

temperature inversion.

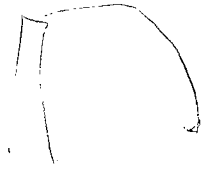




Q

# of hours — 1 hr value

$X_3 = X_1 \cdot 0.9$
$X_8 = X_1 \cdot 0.7$
$X_{24} = X_1 \cdot 0.4$
} $\mu g/m^3$



inversion breakup fumigation.

8.2 Screening Techniques

(no Met data, or no site data)

I. Screening Using PTPLU

A. Applicability

This screening technique is appropriate for a single-point source with a plume height of 10-300 meters and averaging times of 1-24 hours. This procedure is particularly useful for sources where the short-term averaging standards will be controlling. Elevated point sources are most likely to be in this category. This technique does not apply to sources effected by either building downwash or terrain impaction.

- NO wind speed

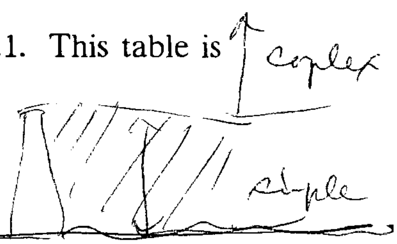
B. Overview

This screening procedure should be used to calculate the maximum one-hour concentration (Steps 1-4). The maximum value can be multiplied by a factor to estimate other averaging periods (Step 5). Then account for background concentrations (Step 6).

C. Procedure - Volume 10 R

Step 1-3. Not used if PTPLU is employed.

Step 4. Determine the procedures required from Table 8.2.1. This table is taken from Table 4-1 in Volume 10.



Simple terrain – independent of the terrain structure.
any terrain smaller than stack height (elevation)

Complex terrain – above the stack height.

* one source at a time

* Screening always changes with height of plume height is higher than [illegible] m H.

C: [illegible] → all concentration is zero.

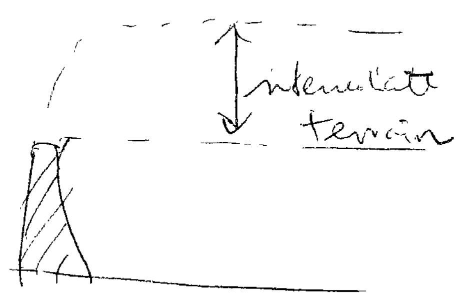


TABLE 8.2.1.
Calculation Procedures to Use With
Various Stack Heights

Height of Emission (stack height)	Applicable Calculation Procedures
$h_s \geq 50$ meters	Looping 4(a) Limited mixing 4(b) Coning 4(c) Fumigation 4(e)
$10 \leq h_s < 50$ meters	Looping 4(a) Coning 4(c) Fanning 4(d) Fumigation 4(e)
$h_s < 10$ meters	Coning 4(c) Fanning 4(d)
$h_s < h_b + 1.5a$	Downwash 4(f)

Step 4(a). Looping Plume - Select the maximum value from PTPLU stability class A and Extrapolated Wind Speeds.

Step 4(b). Limited Mixing - Double the value for stability class C, 2.5 meters per second and Extrapolation Wind Speeds from PTPLU.

Step 4(c). Coning Plume - Select the maximum value from PTPLU stability class C and Extrapolated Wind Speeds.

Step 4(d). Fanning Plume - Select the maximum value from PTPLU stability classes E and F for Extrapolated Wind Speeds.

Step 4(e). Fumigation - This analysis is not applicable to PTPLU screening.

Step 4(f). Downwash - Use ISCST screening procedure.

Step 5. Select the highest concentration from the above analyses. For averaging times greater than one hour, multiply the highest value by 0.9 to estimate a three-hour concentration, 0.7 for an eight-hour concentration, and 0.4 for a 24- hour concentration.

Step 6. In general, if the concentrations from Step 5 are greater than the modeling "levels-of- significance, a refined technique is required. If the source is a single stack source in an isolated location and if the background concentrations can be determined, the screening analysis may be used to determine compliance with standards.

II. Screening Using a Refined Model

A. Technique

The same procedures as above can be used with ISCST along with hypothetical meteorological data.

B. Hypothetical Meteorological Data

Use the same combination of wind speeds and stability classes as PTPLU in the ISCST model (wind speeds less than one meter per second may be omitted). Hypothetical meteorological data is shown in Table 8.2.2.

C. Method

Follow the techniques listed in Section I for PTPLU except use the concentrations from ISCST with the hypothetical meteorological data.

III. Summary

IV. Questions

Table 8.2.2
Hypothetical Meteorological Data

	Wind Speed (m/s)	Mixing Height (m)	Temp. (deg C)	Stability Class
1	0.5*	5000.	293.	1
2	0.8*	5000.	293.	1
3	1.0	5000.	293.	1
4	1.5	5000.	293.	1
5	2.0	5000.	293.	1
6	2.5	5000.	293.	1
7	3.0	5000.	293.	1
8	0.5*	5000.	293.	2
9	0.8*	5000.	293.	2
10	1.0	5000.	293.	2
11	1.5	5000.	293.	2
12	2.0	5000.	293.	2
13	2.5	5000.	293.	2
14	3.0	5000.	293.	2
15	4.0	5000.	293.	2
16	5.0	5000.	293.	2
17	2.0	5000.	293.	3
18	2.5	5000.	293.	3
19	3.0	5000.	293.	3
20	4.0	5000.	293.	3
21	5.0	5000.	293.	3
22	7.0	5000.	293.	3
23	10.0	5000.	293.	3
24	12.0	5000.	293.	3
25	15.0	5000.	293.	3

* Not used for regulatory applications.

Table 8.2.2 (cont.)

	Wind Speed (m/s)	Mixing Height (m)	Temp. (deg C)	Stability Class
26	0.5*	5000.	293.	4
27	0.8*	5000.	293.	4
28	1.0	5000.	293.	4
29	1.5	5000.	293.	4
30	2.0	5000.	293.	4
31	2.5	5000.	293.	4
32	3.0	5000.	293.	4
33	4.0	5000.	293.	4
34	5.0	5000.	293.	4
35	7.0	5000.	293.	4
36	10.0	5000.	293.	4
37	12.0	5000.	293.	4
38	15.0	5000.	293.	4
39	20.0	5000.	293.	4
40	2.0	5000.	293.	5
41	2.5	5000.	293.	5
42	3.0	5000.	293.	5
43	4.0	5000.	293.	5
44	5.0	5000.	293.	5
45	2.0	5000.	293.	6
46	2.5	5000.	293.	6
47	3.0	5000.	293.	6
48	4.0	5000.	293.	6
49	5.0	5000.	293.	6

* Not used for regulatory applications.

$$i' = \bar{u} + 2\left(\frac{d}{\ }\right)\left[\frac{V_s}{u} - 1.5\right]$$

if $V_s < 1.5u$. stack diameter

Input:

- control cards:

- source cards:

- met cards: surface data
  date,
  station #
  wind profile exponent, } (default)
  temperature gradient,
  wind speed category,
  wind speed,
  ambient temp
  mixing ht,
  stack height,

8.3 Demonstration of Screening Models

I. Screening Using PTPLU - Sulfur Oxides

A. Stack Parameters for Demonstration

Emission Rate (g/s)	Stack Height (m)	Stack Temp. (K)	Velocity (m/s)	Diameter (m)
100.0	35.0	432.	11.7	2.40

B. Model Input Data -- Table 8.3.1

Model Options:
- Regulatory Default option
- 5000 meter mixing height
- 10 meter anemometer height
- zero receptor height
- default w-s profile exponent

C. PTPLU Output -- Table 8.3.2

D. Step 4.

From Table 8.2.1, a stack height of 35 meters indicates that the following conditions should be evaluated:

Looping 4(a)
Coning 4(c)
Fanning 4(d)
Fumigation 4(e)

Step 4(a) - Looping: The maximum concentration for stability class A is 268 ug/m^3 at 0.56 km downwind.

Step 4(b) - Limited Mixing: Not required for is example. If it was used for this example, the value would be 302 ug/m^3 at 2.1 km.

Step 4(c) - Coning Plume: The maximum concentration for stability class C is 264 ug/m^3 at 0.6 km.

Step 4(d) - Fanning: The maximum concentration for E and F stability class is 139 ug/m^3 at 5.9 km.

Step 4(e) - Fumigation: Not applicable for PTPLU screening.

Step 4(f). Downwash - Use ISCST screening procedure if downwash is possible.

Step 5. The highest concentration from the above analyses is 268 ug/m^3 from 4(a). This value should be used as representing an one-hour concentration. Other averaging periods are as follows:

Three-hour Average (times 0.9): 241. ug/m^3
24-hour Average (times 0.4): 107. ug/m^3

Step 6. Since the concentrations in Step 5 are greater than the modeling level-of-significance, a refined technique is required. Give examples of values that would not require a refined analysis including consideration of background concentrations.

II. Screening Using a Refined Model - ISCST With Downwash

A. Stack Parameters for ISCST Demonstration

The same stack parameters from the PTPLU demonstration will be used for this demonstration with the addition of the following building parameters.

Building Height (B_h): 30.5 meters
Building Width (B_w): 15.0 meters
Building Length (B_l): 25.0 meters

B. Model Input Data -- Table 8.3.3

The same model options are used as in the PTPLU demonstration.

Building Input Parameters: The maximum cross-wind dimension is 29.2 meters $[(15)^2 + (25)^2)]^{1/2}$. Because the ISCST model calculates an equivalent diameter from the values entered for building width and height, pseudo values must be calculated to "force" the model to use the correct cross-wind dimension.

For a Square Building $B_w = B_l$
We will use S as the side length:

$$S = D_{eq} (3.1417/4)^{1/2} = 29.2 (3.1417/4)^{1/2}$$

$$S = 25.9 \text{ meters}$$

By entering 25.9 meters for building width and height the model will calculate an equivalent diameter to be used as the cross-wind dimension.

Equivalent Diameter:

$D_{eq} = (B_w B_l 4/3.1417)^{1/2} = [(25.9)(25.9)(4/3.1417)]^{1/2}$
$D_{eq} = 29.2$ meters (This is the value we want the model to use)

C. Output Data -- Table 8.3.4

D. Step 4.

From Table 8.2.1, a stack height of 35 meters indicates that the following conditions should be evaluated:

Looping 4(a)
Coning 4(c)
Fanning 4(d)
Fumigation 4(e)

Step 4(a) - Looping: The maximum concentration for stability class A is 527 ug/m^3 at 300 meters.

Step 4(b) - Limited Mixing: Not required for is example.

Step 4(c) - Coning Plume: The maximum concentration for stability class C is 2123 ug/m^3 at 88 meters.

Step 4(d) - Fanning: The maximum concentration for E and F stability class is 6517 ug/m^3 at 88 meters.

Step 4(e) - Fumigation: Not applicable.

Step 4(f). Downwash - All values above considered downwash.

Step 5. The highest concentration from the above analyses is 6517 ug/m^3 from 4(d). This value should be used as representing an one-hour concentration. Other averaging periods are as follows:

Three-hour Average (times 0.9): 5865. ug/m^3
24-hour Average (times 0.4): 2606. ug/m^3

Step 6. Since the concentrations in Step 5 are greater than the modeling level-of-significance, a refined technique is required. Compare the ISCST values and PTPLU values.

III. Comparison of PTPLU and ISCST Screening

	PTPLU		ISCST	
	Concentration (ug/m^3)	Distance (km)	Concentration (ug/m^3)	Distance (km)
Looping	268	0.56	527	0.3
Coning	264	0.60	2121	0.088
Fanning	139	5.9	6517	0.088

IV. Summary

V. Questions

Table 8.3.1 PTPLU INPUT FILE EXAMPLE

```
0,1,1,293.,5000.,0.,1,2
10.,.07,.07,.10,.15,.35,.55
PTPLU EXAMPLE - Lesson 8.3
100.,35.,432.,11.7,2.4
```

Table 8.3.2 PTPLU EXAMPLE

PTPLU-2.0 (DATED 86196)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 3. NON-GUIDELINE MODELS.
IN UNAMAP (VERSION 6) JUL 86

>>>INPUT PARAMETERS<<<

*** TITLE*** PTPLU EXAMPLE - Lesson 8.3

OPTIONS
IF = 1, USE OPTION
IF = 0, IGNORE OPTION
IOPT(1) = 0 (GRAD PLUME RISE)
IOPT(2) = 1 (STACK DOWNWASH)
IOPT(3) = 1 (BUOY. INDUCED DISP.)
IDFLT = 1 (1 = USE DEFAULT, 0 = NOT USE DEFAULT)
MUOR = 2 (1 = URBAN, 2 = RURAL)

METEOROLOGY
AMBIENT AIR TEMPERATURE = 293.00 (K)
MIXING HEIGHT = 5000.00 (M)
ANEMOMETER HEIGHT = 10.00 (M)
WIND PROFILE EXPONENTS = A: .07, B: .07, C: .10
D: .15, E: .35, F: .55

SOURCE
EMISSION RATE = 100.00 (G/SEC)
STACK HEIGHT = 35.00 (M)
EXIT TEMP. = 432.00 (K)
EXIT VELOCITY = 11.70 (M/SEC)
STACK DIAM. = 2.40 (M)

RECEPTOR HEIGHT = .00 (M)

>>>CALCULATED PARAMETERS<<<

VOLUMETRIC FLOW = 52.93 (M**3/SEC)   BUOYANCY FLUX PARAMETER = 53.16 (M**4/SEC**3)

PTPLU EXAMPLE - Lesson 8.3

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
1	.50	1.2309E+02	1.268	878.6(2)	.55	1.3008E+02	1.216	807.8(2)
1	.80	1.6212E+02	1.015	562.2(2)	.87	1.6971E+02	.975	518.0(2)
1	1.00	1.8146E+02	.916	456.8(2)	1.09	1.8906E+02	.881	421.4(2)
1	1.50	2.1589E+02	.766	316.2(2)	1.64	2.2294E+02	.737	292.6(2)
1	2.00	2.3811E+02	.678	245.9(2)	2.18	2.4426E+02	.654	228.2(2)
1	2.50	2.5303E+02	.620	203.7(2)	2.73	2.5816E+02	.599	189.6
1	3.00	2.6334E+02	.576	175.6	3.27	2.6769E+02	.558	163.8

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
2	.50	5.9647E+01	4.783	878.6(2)	.55	6.3709E+01	4.426	807.8(2)
2	.80	8.4250E+01	3.174	562.2(2)	.87	8.9640E+01	2.944	518.0(2)
2	1.00	9.8471E+01	2.626	456.8(2)	1.09	1.0451E+02	2.440	421.4(2)
2	1.50	1.2841E+02	1.880	316.2(2)	1.64	1.3549E+02	1.753	292.6(2)
2	2.00	1.5225E+02	1.499	245.9(2)	2.18	1.5979E+02	1.402	228.2(2)
2	2.50	1.7153E+02	1.267	203.7(2)	2.73	1.7913E+02	1.188	189.6
2	3.00	1.8725E+02	1.110	175.6	3.27	1.9464E+02	1.044	163.8
2	4.00	2.1066E+02	.911	140.4	4.37	2.1716E+02	.860	131.6
2	5.00	2.2635E+02	.789	119.4	5.46	2.3164E+02	.748	112.3

Table 8.3.2 PTPLU EXAMPLE (cont.)

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
3	2.00	1.2070E+02	2.860	245.9(2)	2.27	1.3137E+02	2.555	221.1(2)
3	2.50	1.3995E+02	2.343	203.7(2)	2.83	1.5116E+02	2.103	183.9
3	3.00	1.5632E+02	2.004	175.6	3.40	1.6764E+02	1.806	159.0
3	4.00	1.8207E+02	1.586	140.4	4.53	1.9277E+02	1.440	128.0
3	5.00	2.0070E+02	1.338	119.4	5.67	2.1012E+02	1.223	109.4
3	7.00	2.2353E+02	1.059	95.3	7.93	2.3032E+02	.976	88.0
3	10.00	2.4698E+02	.832	75.6	11.33	2.5390E+02	.767	70.0
3	12.00	2.5649E+02	.740	67.6	13.60	2.6084E+02	.686	62.9
3	15.00	2.6289E+02	.649	59.7	17.00	2.6372E+02	.606	55.9

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
4	.50	7.3754E+00	85.010	878.6(2)	.60	9.8497E+00	60.160	734.1(2)
4	.80	1.5114E+01	36.101	562.2(2)	.97	1.9832E+01	28.851	471.9(2)
4	1.00	2.0779E+01	27.291	456.8(2)	1.21	2.6550E+01	20.350	384.5(2)
4	1.50	3.4944E+01	14.612	316.2(2)	1.81	4.3890E+01	11.075	268.0(2)
4	2.00	4.9291E+01	10.000	245.9(2)	2.41	6.0009E+01	7.898	209.8(2)
4	2.50	6.2183E+01	7.545	203.7(2)	3.02	7.4612E+01	5.960	174.8
4	3.00	7.4223E+01	5.997	175.6	3.62	8.7872E+01	4.786	151.5
4	4.00	9.5524E+01	4.257	140.4	4.83	1.1041E+02	3.452	122.4
4	5.00	1.1323E+02	3.323	119.4	6.03	1.2765E+02	2.845	104.9
4	7.00	1.3783E+02	2.479	95.3	8.45	1.5175E+02	2.081	84.4
4	10.00	1.6608E+02	1.772	75.6	12.07	1.8033E+02	1.499	67.4
4	12.00	1.7994E+02	1.506	67.6	14.48	1.9162E+02	1.289	60.8
4	15.00	1.9346E+02	1.254	59.7	18.10	2.0109E+02	1.090	54.2
4	20.00	2.0356E+02	1.017	51.7	24.13	2.0306E+02	1.000	47.6

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
5	2.00	1.6417E+02	7.128	123.7	3.10	1.3923E+02	5.937	111.6
5	2.50	1.5119E+02	6.488	117.3	3.88	1.2743E+02	5.427	106.1
5	3.00	1.4103E+02	6.019	112.5	4.65	1.1826E+02	5.048	101.9
5	4.00	1.2582E+02	5.359	105.4	6.20	1.0463E+02	4.522	95.8
5	5.00	1.1473E+02	4.911	100.4	7.75	9.4784E+01	4.165	91.5

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
6	2.00	1.2627E+02	14.811	108.6	3.98	9.9129E+01	10.790	93.5
6	2.50	1.1720E+02	13.322	103.3	4.98	9.0957E+01	9.801	89.3
6	3.00	1.0998E+02	12.250	99.3	5.98	8.4541E+01	9.070	86.1
6	4.00	9.8975E+01	10.771	93.4	7.97	7.5394E+01	8.040	81.3
6	5.00	9.0809E+01	9.772	89.2	9.96	7.2668E+01	7.000	76.5

(1) THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.

(2) THE PLUME IS CALCULATED TO BE AT A HEIGHT WHERE CARE SHOULD BE USED IN INTERPRETING THE COMPUTATION.

(3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 100 KILOMETERS FROM THE SOURCE.

Table 8.3.3 ISCST Screening Input Example

```
SCREENING RUN - SO2
 1 1 1 0 0 1 1 0 0 0 0 0 0 0 0 1 0 0 2 0 1 1 0 2 2 1 2 2 1 2 0                 0
     1     0     0    16     0     0     1    49
       87.        0.
       88.        0.
      100.        0.
      200.        0.
      300.        0.
      500.        0.
      700.        0.
     1000.        0.
     2000.        0.
     3000.        0.
     5000.        0.
     7000.        0.
    10000.        0.
    20000.        0.
    30000.        0.
    50000.        0.
      10.0      1.54      3.09      5.14      8.23      10.8
             0  GRAMS/SECONDMICROGRAMS/CUBIC METER        5 3
    500 00100.0000     0.      0.      0.  35.0 432.0 11.00  2.40 -30.525.87825.878
  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
29.20029.20029.20029.20029.20029.20029.20029.20029.20029.20029.20029.200
29.20029.20029.20029.20029.20029.20029.20029.20029.20029.20029.20029.200
29.20029.20029.20029.20029.20029.20029.20029.20029.20029.20029.20029.200
       1     90.      .5   5000.    293.                   1
       2     90.      .8   5000.    293.                   1
       3     90.      1.   5000.    293.                   1
       4     90.     1.5   5000.    293.                   1
       5     90.      2.   5000.    293.                   1
       6     90.     2.5   5000.    293.                   1
       7     90.      3.   5000.    293.                   1
       8     90.      .5   5000.    293.                   2
       9     90.      .8   5000.    293.                   2
      10     90.      1.   5000.    293.                   2
      11     90.     1.5   5000.    293.                   2
      12     90.      2.   5000.    293.                   2
      13     90.     2.5   5000.    293.                   2
      14     90.      3.   5000.    293.                   2
       .                                                   .
       .                                                   .
       .                                                   .
      32     90.      3.   5000.    293.                   4
      33     90.      4.   5000.    293.                   4
      34     90.      5.   5000.    293.                   4
      35     90.      7.   5000.    293.                   4
      36     90.     10.   5000.    293.                   4
      37     90.     12.   5000.    293.                   4
      38     90.     15.   5000.    293.                   4
      39     90.     20.   5000.    293.                   4
      40     90.      2.   5000.    293.                   5
      41     90.     2.5   5000.    293.                   5
      42     90.      3.   5000.    293.                   5
      43     90.      4.   5000.    293.                   5
      44     90.      5.   5000.    293.                   5
      45     90.      2.   5000.    293.                   6
      46     90.     2.5   5000.    293.                   6
      47     90.      3.   5000.    293.                   6
      48     90.      4.   5000.    293.                   6
      49     90.      5.   5000.    293.                   6
```

Table 8.3.4 ISCST Screening Output Example

```
    ISCST (DATED 88207)

              *** SCREENING RUN - SO2                                                ***

CALCULATE (CONCENTRATION=1,DEPOSITION=2)                                ISW(1) =   1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)                 ISW(2) =   1
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)                        ISW(3) =   1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)                                ISW(4) =   0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)                           ISW(5) =   0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)                        ISW(6) =   1

COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)
WITH THE FOLLOWING TIME PERIODS:
  HOURLY (YES=1,NO=0)                                                   ISW(7) =   1
  2-HOUR (YES=1,NO=0)                                                   ISW(8) =   0
  3-HOUR (YES=1,NO=0)                                                   ISW(9) =   0
  4-HOUR (YES=1,NO=0)                                                  ISW(10) =   0
  6-HOUR (YES=1,NO=0)                                                  ISW(11) =   0
  8-HOUR (YES=1,NO=0)                                                  ISW(12) =   0
  12-HOUR (YES=1,NO=0)                                                 ISW(13) =   0
  24-HOUR (YES=1,NO=0)                                                 ISW(14) =   0
PRINT 'N'-DAY TABLE(S) (YES=1,NO=0)                                    ISW(15) =   0

PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE
SPECIFIED BY ISW(7) THROUGH ISW(14):
  DAILY TABLES (YES=1,NO=0)                                            ISW(16) =   1
  HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)                         ISW(17) =   0
  MAXIMUM 50 TABLES (YES=1,NO=0)                                       ISW(18) =   0
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)              ISW(19) =   2
RURAL-URBAN OPTION (RU.=0,UR. MODE 1=1,UR. MODE 2=2,UR. MODE 3=3)      ISW(20) =   0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)              ISW(21) =   1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3)       ISW(22) =   1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES>0)                      ISW(23) =   0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)                  ISW(24) =   2
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)            ISW(25) =   2
PROGRAM USES BUOYANCY INDUCED DISPERSION (YES=1,NO=2)                  ISW(26) =   1
CONCENTRATIONS DURING CALM PERIODS SET = 0 (YES=1,NO=2)                ISW(27) =   2
REG. DEFAULT OPTION CHOSEN (YES=1,NO=2)                                ISW(28) =   2
TYPE OF POLLUTANT TO BE MODELLED (1=SO2,2=OTHER)                       ISW(29) =   1
DEBUG OPTION CHOSEN (YES=1,NO=2)                                       ISW(30) =   2
ABOVE GROUND (FLAGPOLE) RECEPTORS USED (YES=1,NO=0)                    ISW(31) =   0

NUMBER OF INPUT SOURCES                                                 NSOURC =   1
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)                                NGROUP =   0
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)                    IPERD =   0
NUMBER OF X (RANGE) GRID VALUES                                         NXPNTS =   0
NUMBER OF Y (THETA) GRID VALUES                                         NYPNTS =   0
NUMBER OF DISCRETE RECEPTORS                                            NXWYPT =  16
NUMBER OF HOURS PER DAY IN METEOROLOGICAL DATA                          NHOURS =   1
NUMBER OF DAYS OF METEOROLOGICAL DATA                                    NDAYS =  49
SOURCE EMISSION RATE UNITS CONVERSION FACTOR                                TK =.10000E+07
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED                        ZR =  10.00  METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA                                IMET =   5
ALLOCATED DATA STORAGE                                                   LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN                               MIMIT =   367 WORDS
```

Table 8.3.4 ISCST Screening Output Example (cont.)

*** X,Y COORDINATES OF DISCRETE RECEPTORS ***
(METERS)

```
(    87.0,       .0), (    88.0,       .0), (   100.0,       .0), (   200.0,       .0), (   300.0,       .0),
(   500.0,       .0), (   700.0,       .0), (  1000.0,       .0), (  2000.0,       .0), (  3000.0,       .0),
(  5000.0,       .0), (  7000.0,       .0), ( 10000.0,       .0), ( 20000.0,       .0), ( 30000.0,       .0),
( 50000.0,       .0), (
```

*** SCREENING RUN - SO2 ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
5	0	0	0	.10000E+03	.0	.0	.0	35.00	432.00	11.00	2.40	-30.50	25.88	25.88

*** SCREENING RUN - SO2 ***

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE 1

IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE	IFV	BH	BW	IWAKE
1	30.5,	29.2,	0	2	30.5,	29.2,	0	3	30.5,	29.2,	0	4	30.5,	29.2,	0	5	30.5,	29.2,	0	6	30.5,	29.2,	0
7	30.5,	29.2,	0	8	30.5,	29.2,	0	9	30.5,	29.2,	0	10	30.5,	29.2,	0	11	30.5,	29.2,	0	12	30.5,	29.2,	0
13	30.5,	29.2,	0	14	30.5,	29.2,	0	15	30.5,	29.2,	0	16	30.5,	29.2,	0	17	30.5,	29.2,	0	18	30.5,	29.2,	0
19	30.5,	29.2,	0	20	30.5,	29.2,	0	21	30.5,	29.2,	0	22	30.5,	29.2,	0	23	30.5,	29.2,	0	24	30.5,	29.2,	0
25	30.5,	29.2,	0	26	30.5,	29.2,	0	27	30.5,	29.2,	0	28	30.5,	29.2,	0	29	30.5,	29.2,	0	30	30.5,	29.2,	0
31	30.5,	29.2,	0	32	30.5,	29.2,	0	33	30.5,	29.2,	0	34	30.5,	29.2,	0	35	30.5,	29.2,	0	36	30.5,	29.2,	0

*** SCREENING RUN - SO2 ***

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 001 METERS OR THREE BUILDING HEIGHTS IN DISTANCE. NO AVERAGE CONCENTRATION IS CALCULATED *

SOURCE NUMBER	- - RECEPTOR LOCATION - - X OR RANGE (METERS)	Y (METERS) OR DIRECTION (DEGREES)	DISTANCE BETWEEN (METERS)
5	87.0	.0	87.00

Table 8.3.4 ISCST Screening Output Example

DAILY: 1
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 1 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	4.93952	100.0	.0	5.08407
200.0	.0	5.00340	300.0	.0	4.69807	500.0	.0	6.17031
700.0	.0	27.02977	1000.0	.0	119.21220	2000.0	.0	62.36719
3000.0	.0	25.58236	5000.0	.0	16.89387	7000.0	.0	12.81121
10000.0	.0	9.51664	20000.0	.0	5.33061	30000.0	.0	3.80708
50000.0	.0	2.50380						

DAILY: 2
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 2 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	2.95209	100.0	.0	3.51294
200.0	.0	6.90929	300.0	.0	9.39828	500.0	.0	22.29876
700.0	.0	101.90610	1000.0	.0	180.09000	2000.0	.0	44.13558
3000.0	.0	16.69342	5000.0	.0	10.76021	7000.0	.0	8.09720
10000.0	.0	5.98719	20000.0	.0	3.34069	30000.0	.0	2.38384
50000.0	.0	1.56698						

DAILY: 3
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 3 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	.00000	100.0	.0	.00000
200.0	.0	.00000	300.0	.0	.00064	500.0	.0	4.68125
700.0	.0	155.46320	1000.0	.0	208.97860	2000.0	.0	37.83156
3000.0	.0	13.74519	5000.0	.0	8.71292	7000.0	.0	6.52273
10000.0	.0	4.80837	20000.0	.0	2.67621	30000.0	.0	1.90863
50000.0	.0	1.25419						

Table 8.3.4 ISCST Screening Output Example

DAILY: 4
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 4 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	.00000	100.0	.0	.00000
200.0	.0	.11748	300.0	.0	4.36673	500.0	.0	104.87460
700.0	.0	276.88120	1000.0	.0	173.10000	2000.0	.0	25.51383
3000.0	.0	9.16790	5000.0	.0	5.81006	7000.0	.0	4.34957
10000.0	.0	3.20638	20000.0	.0	1.78459	30000.0	.0	1.27273
50000.0	.0	.83634						

DAILY: 5
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 5 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	.02513	100.0	.0	.08885
200.0	.0	16.82679	300.0	.0	82.66024	500.0	.0	269.33670
700.0	.0	292.97490	1000.0	.0	140.08230	2000.0	.0	19.21289
3000.0	.0	6.87709	5000.0	.0	4.35792	7000.0	.0	3.26246
10000.0	.0	2.40499	20000.0	.0	1.33856	30000.0	.0	.95463
50000.0	.0	.62731						

DAILY: 6
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 6 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	2.93973	100.0	.0	6.90579
200.0	.0	144.87810	300.0	.0	289.12380	500.0	.0	379.46540
700.0	.0	274.60510	1000.0	.0	116.05690	2000.0	.0	15.39893
3000.0	.0	5.50210	5000.0	.0	3.48648	7000.0	.0	2.61008
10000.0	.0	1.92407	20000.0	.0	1.07089	30000.0	.0	.76374
50000.0	.0	.50187						

Table 8.3.4 ISCST Screening Output Example

DAILY: 7
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 7 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	44.54927	100.0	.0	53.82083
200.0	.0	417.27660	300.0	.0	527.28690	500.0	.0	428.44230
700.0	.0	249.17290	1000.0	.0	98.55045	2000.0	.0	12.84528
3000.0	.0	4.58528	5000.0	.0	2.90546	7000.0	.0	2.17511
10000.0	.0	1.60343	20000.0	.0	.89243	30000.0	.0	.63646
50000.0	.0	.41823						

DAILY: 17
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 17 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	.00057	100.0	.0	.00017
200.0	.0	.00000	300.0	.0	.00005	500.0	.0	.00345
700.0	.0	.42373	1000.0	.0	18.31762	2000.0	.0	163.11490
3000.0	.0	158.35690	5000.0	.0	92.67010	7000.0	.0	56.61921
10000.0	.0	31.74382	20000.0	.0	9.59650	30000.0	.0	4.68866
50000.0	.0	1.89450						

DAILY: 18
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 18 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	6.30042	100.0	.0	3.67796
200.0	.0	.19624	300.0	.0	.13177	500.0	.0	.89529
700.0	.0	12.06514	1000.0	.0	91.68928	2000.0	.0	216.41430
3000.0	.0	160.84720	5000.0	.0	81.33778	7000.0	.0	47.60183
10000.0	.0	26.05305	20000.0	.0	7.73094	30000.0	.0	3.76305
50000.0	.0	1.51742						

Table 8.3.4 ISCST Screening Output Example

DAILY: 19
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 19 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	155.63380	100.0	.0	119.10570
200.0	.0	22.46925	300.0	.0	14.59278	500.0	.0	21.92337
700.0	.0	77.53087	1000.0	.0	212.29620	2000.0	.0	236.01950
3000.0	.0	151.63750	5000.0	.0	70.95924	7000.0	.0	40.61578
10000.0	.0	21.96200	20000.0	.0	6.45916	30000.0	.0	3.13889
50000.0	.0	1.26474						

DAILY: 20
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 20 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1128.69100	100.0	.0	1045.15600
200.0	.0	533.99260	300.0	.0	372.32560	500.0	.0	256.09060
700.0	.0	331.40440	1000.0	.0	391.40390	2000.0	.0	226.12990
3000.0	.0	127.32480	5000.0	.0	55.48586	7000.0	.0	31.11490
10000.0	.0	16.63833	20000.0	.0	4.85413	30000.0	.0	2.35558
50000.0	.0	.94854						

DAILY: 21
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 21 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1842.89600	100.0	.0	1795.66700
200.0	.0	1279.21800	300.0	.0	953.80990	500.0	.0	569.37950
700.0	.0	522.00840	1000.0	.0	448.64920	2000.0	.0	199.98400
3000.0	.0	106.67380	5000.0	.0	45.13705	7000.0	.0	25.09847
10000.0	.0	13.36027	20000.0	.0	3.88540	30000.0	.0	1.88453
50000.0	.0	.75872						

Table 8.3.4 ISCST Screening Output Example

DAILY: 22
1-HR/PD 1
SGROUP# 1

*** SCREENING [illegible] - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 22 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	2123.80100	100.0	.0	2107.44100
200.0	.0	1774.54900	300.0	.0	1404.05300	500.0	.0	825.77490
700.0	.0	606.66770	1000.0	.0	416.51340	2000.0	.0	153.70410
3000.0	.0	78.76664	5000.0	.0	32.61118	7000.0	.0	18.02244
10000.0	.0	9.56285	20000.0	.0	2.77526	30000.0	.0	1.34574
50000.0	.0	.54178						

DAILY: 23
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 23 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1850.77600	100.0	.0	1831.89200
200.0	.0	1567.76800	300.0	.0	1256.11800	500.0	.0	754.87510
700.0	.0	513.54500	1000.0	.0	322.92000	2000.0	.0	110.57010
3000.0	.0	55.77681	5000.0	.0	22.90249	7000.0	.0	12.62934
10000.0	.0	6.69430	20000.0	.0	1.94183	30000.0	.0	.94163
50000.0	.0	.37913						

DAILY: 24
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 24 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1645.09400	100.0	.0	1623.61900
200.0	.0	1376.89800	300.0	.0	1100.10200	500.0	.0	664.83990
700.0	.0	445.34430	1000.0	.0	274.75570	2000.0	.0	92.59132
3000.0	.0	46.55906	5000.0	.0	19.08827	7000.0	.0	10.52247
10000.0	.0	5.57691	20000.0	.0	1.61778	30000.0	.0	.78454
50000.0	.0	.31590						

Table 8.3.4 ISCST Screening Output Example

DAILY: 25
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 25 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1391.47000	100.0	.0	1368.61700
200.0	.0	1144.30400	300.0	.0	908.82390	500.0	.0	550.50270
700.0	.0	365.10650	1000.0	.0	222.49060	2000.0	.0	74.23608
3000.0	.0	37.26143	5000.0	.0	15.26500	7000.0	.0	8.41405
10000.0	.0	4.45956	20000.0	.0	1.29384	30000.0	.0	.62750
50000.0	.0	.25269						

DAILY: 40
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 40 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	96.41584	100.0	.0	66.06198
200.0	.0	7.34562	300.0	.0	3.52828	500.0	.0	1.24871
700.0	.0	4.37056	1000.0	.0	15.00642	2000.0	.0	71.93365
3000.0	.0	126.89500	5000.0	.0	155.06790	7000.0	.0	152.79430
10000.0	.0	131.79950	20000.0	.0	78.12421	30000.0	.0	53.11888
50000.0	.0	31.64016						

DAILY: 41
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 41 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1083.79900	100.0	.0	928.24360
200.0	.0	307.77910	300.0	.0	178.41170	500.0	.0	14.30711
700.0	.0	27.85426	1000.0	.0	55.07400	2000.0	.0	126.96090
3000.0	.0	169.16920	5000.0	.0	168.66040	7000.0	.0	151.86290
10000.0	.0	122.79240	20000.0	.0	67.74323	30000.0	.0	45.08991
50000.0	.0	26.39863						

Table 8.3.4 ISCST Screening Output Example

DAILY: 42
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 42 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	2535.22800	100.0	.0	2367.35200
200.0	.0	1272.91800	300.0	.0	829.74930	500.0	.0	104.64730
700.0	.0	73.78295	1000.0	.0	110.13650	2000.0	.0	171.48960
3000.0	.0	194.05560	5000.0	.0	171.39300	7000.0	.0	145.78870
10000.0	.0	113.14560	20000.0	.0	59.57720	30000.0	.0	39.09396
50000.0	.0	22.62969						

DAILY: 43
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 43 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	4094.18000	100.0	.0	4023.88400
200.0	.0	3073.97000	300.0	.0	2268.79700	500.0	.0	682.81590
700.0	.0	246.74050	1000.0	.0	198.25960	2000.0	.0	223.38050
3000.0	.0	203.19320	5000.0	.0	163.29440	7000.0	.0	129.90830
10000.0	.0	96.05175	20000.0	.0	47.79824	30000.0	.0	30.81310
50000.0	.0	17.58737						

DAILY: 44
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 44 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	4338.34900	100.0	.0	4302.07300
200.0	.0	3598.26800	300.0	.0	2790.42400	500.0	.0	1192.96100
700.0	.0	585.99210	1000.0	.0	265.70180	2000.0	.0	242.12700
3000.0	.0	203.09350	5000.0	.0	150.03300	7000.0	.0	114.93860
10000.0	.0	82.68193	20000.0	.0	39.81702	30000.0	.0	25.39730
50000.0	.0	14.37578						

Table 8.3.4 ISCST Screening Output Example

DAILY: 45
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 45 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	1983.41800	100.0	.0	1728.95900
200.0	.0	629.42520	300.0	.0	364.63230	500.0	.0	108.50450
700.0	.0	113.29170	1000.0	.0	111.36590	2000.0	.0	142.89430
3000.0	.0	166.29960	5000.0	.0	175.13990	7000.0	.0	174.58850
10000.0	.0	161.29460	20000.0	.0	110.58380	30000.0	.0	82.48915
50000.0	.0	54.12782						

DAILY: 46
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 46 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	4602.90700	100.0	.0	4379.83500
200.0	.0	2652.08200	300.0	.0	1775.21900	500.0	.0	313.35810
700.0	.0	270.55930	1000.0	.0	250.70830	2000.0	.0	237.41840
3000.0	.0	233.53240	5000.0	.0	209.12860	7000.0	.0	189.65020
10000.0	.0	162.58970	20000.0	.0	102.19610	30000.0	.0	73.80955
50000.0	.0	47.12109						

DAILY: 47
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 47 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	6006.28800	100.0	.0	5883.13000
200.0	.0	4373.43100	300.0	.0	3171.88400	500.0	.0	703.86250
700.0	.0	436.61970	1000.0	.0	376.67470	2000.0	.0	304.60260
3000.0	.0	273.27590	5000.0	.0	222.84160	7000.0	.0	191.68690
10000.0	.0	157.01850	20000.0	.0	93.58136	30000.0	.0	66.21388
50000.0	.0	41.51849						

Table 8.3.4 ISCST Screening Output Example

DAILY: 48
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 48 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	6517.44600	100.0	.0	6464.00500
200.0	.0	5432.10600	300.0	.0	4216.45600	500.0	.0	1690.94700
700.0	.0	730.43340	1000.0	.0	532.33050	2000.0	.0	368.46600
3000.0	.0	300.71210	5000.0	.0	222.39040	7000.0	.0	180.42220
10000.0	.0	140.34940	20000.0	.0	78.73162	30000.0	.0	54.37086
50000.0	.0	33.35163						

DAILY: 49
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 49 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
87.0	.0	.00000	88.0	.0	6075.40300	100.0	.0	6021.16200
200.0	.0	5151.31900	300.0	.0	4074.27700	500.0	.0	2041.20700
700.0	.0	1130.43400	1000.0	.0	592.11810	2000.0	.0	380.49050
3000.0	.0	296.26400	5000.0	.0	208.61760	7000.0	.0	164.06740
10000.0	.0	124.09450	20000.0	.0	67.35443	30000.0	.0	45.88024
50000.0	.0	27.78418						

8.4 Refined Techniques

I. Criteria for Selection of Preferred Models

A. Averaging Time: Short-term/Long-term

1. Short-term Models (may also be used for long-term averages)

CRSTER
RAM
MPTER
ISCST
BLP

2. Long-term Models

CDM2.0
ISCLT

B. Rural/Urban

1. Land Use Procedures According to Auer:

(1) Classify the land within a three kilometers radius about the source according to land use types as defined by Auer; (2) if classes I1, I2, C1, R2, and R3 account for 50 percent or more of the area, the urban classification should be used, otherwise, use rural classification.

2. Population Density Procedure:

(1) compute the average population density per square kilometer within a three kilometer radius about the source; (2) if the density is greater than 750 people per square kilometer, use the urban classification, otherwise, use the rural classification.

3. Selection:

Of the two methods, the Land Use Procedure is preferred. In areas without significant industrial sources, the Population Density Procedure may be used. For analyses of whole urban complexes, the entire area should be modeled as an urban region if most of the sources are located in areas classified as urban.

C. Terrain

Simple terrain models should be used when terrain elevations do not exceed the stack height of the source being modeled.

II. Meteorological Data

A. Five years of recent on-site data are preferred.

On-site data should have been subjected to quality assurance as listed in the Guideline document.

B. One year on-site or five years of NWS.

If the source is a large source (e.g. 500 MW power plant), at least one year of on-site data or five-years of National Weather Service (NWS) data are required.

C. National Weather Service data should be the most recent five years available.

D. Less than five years (small sources only).

If less than five years of NWS data or one year of on- site data, the highest concentrations should be used, rather than the highest second-high values.

III. Critical Receptor Sites

A. Receptor spacing.

Receptor sites for refined modeling should be utilized in sufficient detail to estimate the highest concentrations and possible violations of a NAAQS or a PSD increment. (GAQM 8-4)

B. Large sources.

For a large source, 360 polar or 400 rectangular receptors with the furthest receptor 10 kilometers away should be sufficient. (GAQM 8-4)

C. Regional Workshop.

A method for selecting receptor sites is contained in the Regional Workshop on Air Quality Modeling: A Summary Report, April 1981, Rev. 1983, EPA-450/4-82- 015. This method uses the PTPLU model to identify the critical distances. From PTPLU (use the ISCST screening technique if downwash is to be considered), identify the highest concentration for each stability class and the distances to these maxima. The nearest distance to a maximum concentration will be used as the first ring distance. Additional ring distances are determined by multiplying the first distance by the following factors:

Ring Number	Factor
1	1.0
2	1.3
3	1.7
4	2.3
5	3.0
6	3.9
7	5.2
8	6.8
9	9.0

A tenth ring may be used to determine areas of high concentrations beyond the ninth ring. If PTPLU indicates that during stability class D high concentrations may occur beyond the last ring, additional rings may be required. Rings do not need to be closer together than 100 meters.

IV. Radius-of-Impact and Area-of-Impact

A. Radius-of-Impact

The Radius-of-Impact is the distance from the source where the sources maximum concentration falls below the modeling "level-of-significance". The Radius-of- Impact must be developed on a pollutant by pollutant basis and on an average period by averaging period basis. These levels-of-significance are as follows:

Pollutant	Averaging Period	Class II Level-of-Significance* (ug/m^3)
TSP, SO_2, NO_2	Annual	1
TSP, SO_2	24-Hour	5
CO	8-Hour	500
SO_2	3-Hour	25
CO	1-Hour	2000

* Ambient Monitoring Guideline for Prevention of Significant Deterioration (PSD) , EPA-450/4-87-007, May 1987. Note that the Class I level-of-significance is one microgram per cubic meter for a 24-hour average.

B. Area-of-Impact

The Area-of-Impact is the area within a circle with a radius equal to the Radius-of-Impact.

V. Emissions Inventory

In addition to the subject source, an emission inventory will have to be assembled of all other sources that creates an impact greater than the modeling level-of-significance within the subjects Area-of-Impact. Generally, a screening approach can be used to assess these impacts. The emission inventory must be assembled on a pollutant by pollutant basis.

Any sources with a PSD permit should be reviewed to determine if values other than the maximum operating loads were used to calculate maximum impacts. These parameters should be used, otherwise, it should be assumed that the source's maximum load conditions will cause maximum impacts.

VI. Summary

VII. Questions

8.5 Demonstration of Refined Models

I. Refined Analysis Using CRSTER

A. Stack Parameters for Demonstration

Emission Rate (g/s)	Stack Height (m)	Stack Temp. (K)	Velocity (m/s)	Diameter (m)
100.0	35.0	432.	11.7	2.40

B. Model Input Data

Model Options:

- Regulatory Default option
- 5000 meter mixing height
- 10 meter anemometer height
- zero receptor height
- default w-s profile exponent

Meteorological Data: Las Vegas 1983

C. Receptor Locations

1. PTPLU distance to maximum is 0.558 kilometers from Table 8.3.2.

2. Receptor locations:

Ring	Distance Factor	Calculated Distance (km)	Modeled Distance (km)
1	1.0	0.558	0.5
2	1.3	0.725	0.7
3	1.7	0.949	0.9
4	2.3	1.283	1.3
5	3.0	1.674	1.7
6	3.9	2.176	2.2
7	5.2	2.902	2.9
8	6.8	3.794	3.8
9	9.0	5.022	5.0

3. What distance do we use for the tenth ring?

   Considerations:

   - If other sources were nearby, the tenth ring could be used to help define the combined impacts.

   - Add a ring closer than calculated above if PTPLU indicates that maximum concentration could occur at a closer distance. From PTPLU (Table 8.3.2) the wind speed, stability class with the closest distance to maximum concentration is the selected value.

   - Add a ring further out than the ninth ring if PTPLU indicates that maximum concentrations could occur at a greater distance. From PTPLU, the distances to maximum concentrations for stability classes 4, 5 and 6 under light winds give distances that are greater than ring nine. The maximum concentrations under these conditions are significantly less than the maximum value and significantly less than concentrations with higher wind speeds. At the higher wind speeds, the distances to the maxima are less than the ninth ring distance.

Selection:

Considering the above, a tenth ring distance is not required. For this example, the tenth ring is placed at 1.1 kilometers.

D. Input Data for Rings 1-5 -- Table 8.5.1

E. Output Printout for Rings 1-5 -- Table 8.5.2

F. Input Data for Rings 6-10 -- Table 8.5.3

G. Output Printout for Rings 6-10 -- Table 8.5.4

II. Refined Analysis Using ISCST

A. Same as CRSTER

B. Same as CRSTER

C. Input Data -- Table 8.5.5

D. Output Printout -- Table 8.5.6

III. Refined Analysis Using ISCLT

A. Same as CRSTER

B. Same as CRSTER

C. Input Data -- Table 8.5.7

D. Output Printout -- Table 8.5.8

IV. Summary

V. Questions

TABLE 8.5.1 CRSTER EXAMPLE -- INPUT DATA (RINGS 1-5)

```
CRSTER CLASS EXAMPLE
THIS IS A SINGLE SOURCE (CRSTER) MODEL EXAMPLE RUN.

    123169   83 3160   83  0.5  0.7  0.9  1.1  1.3  14400. 1
 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1
TEST STACK
      100.                35.0       2.4       11.7     432.0
```

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5)

```
                     CRSTER (VERSION 86211)
                     AN AIR QUALITY DISPERSION MODEL IN
                     SECTION 1. GUIDELINE MODELS (1978)
                     IN UNAMAP (VERSION 6) DEC 86

PLANT NAME: CRSTER CLASS EXAMPLE      EMISSION UNITS: GM/SEC    AIR QUALITY UNITS: GM/M**3 12/80
 THIS IS A SINGLE SOURCE (CRSTER) MODEL EXAMPLE RUN.

             MET FILE      REQUESTED
            STN NO. YR    STN NO. YR
  SURFACE     23169  83    23169  83
  UPPER AIR    3160  83     3160  83
 POLLUTANT: SO2
 PLANT LOCATION: RURAL
 ANEMOMETER HEIGHT IS 10.0 METERS
 HALF LIFE IS         0. SEC
 STACK DOWNWASH ACCOUNTED FOR
 MOMENTUM PLUME RISE ACCOUNTED FOR
 BUOYANCY-INDUCED DISPERSION ACCOUNTED FOR
 DEFAULT OPTION EXERCISED
 WIND PROFILE EXPONENTS ARE:    .070,   .070,   .100,   .150,   .350,   .550,
 NO TAPE OUTPUT
 MET DATA WILL NOT BE PRINTED

 DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 0


 * * * * * * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * * * * * * *

      ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS

      MARKED BY "1" IN THE ABOVE TABLE
```

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

RING DISTANCES(KM)= .50 .70 .90 1.10 1.30

PLANT ELEVATION (FEET ABOVE SEA LEVEL)-- .0 PLANT ELEVATION (METERS ABOVE SEA LEVEL)-- .0

	RECEPTOR ELEVATIONS (FEET ABOVE SEA LEVEL)					RECEPTOR ELEVATIONS (METERS ABOVE SEA LEVEL)				
DIRECTION	RING#1	RING#2	RING#3	RING#4	RING#5	RING#1	RING#2	RING#3	RING#4	RING#5
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
32	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
33	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
34	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
35	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
36	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

STACK # 1--TEST STACK

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	100.0000	35.00	2.40	11.70	432.00	52.93

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
1	11.867	1.019021E-04	33	1.30	13	8.586764E-06	34	1.30
2	22.245	1.088118E-04	19	1.30	10	4.891482E-06	11	1.30
3	18.238	1.287443E-04	25	1.30	12	7.059144E-06	24	1.30
4	18.780	1.213315E-04	25	1.30	12	6.460521E-06	25	1.30
5	17.025	1.586314E-04	25	1.30	11	9.317490E-06	23	1.30
6	18.680	1.055016E-04	25	1.30	13	5.647916E-06	26	1.30
7	15.549	1.480074E-04	5	1.30	11	9.518745E-06	28	1.30
8	14.220	1.357038E-04	26	1.30	15	9.542914E-06	26	1.30
9	8.066	1.951756E-04	23	1.30	11	2.419625E-05	23	1.30
10	16.939	1.889271E-04	35	1.30	10	1.115322E-05	35	1.30
11	23.203	1.415969E-04	2	1.30	12	6.102406E-06	2	1.30
12	21.680	1.619290E-04	17	1.30	14	7.468898E-06	3	1.30
13	8.998	1.353624E-04	34	1.30	9	1.504441E-05	35	1.30
14	18.550	1.889861E-04	20	1.30	14	1.018814E-05	18	1.30
15	10.683	1.148044E-04	31	1.30	14	1.074629E-05	22	1.30
16	16.206	4.942992E-05	1	1.30	23	3.050136E-06	1	1.30
17	19.713	1.596604E-04	21	1.30	14	8.099344E-06	6	1.30
18	6.762	1.835839E-04	23	1.30	15	2.714975E-05	23	1.30
19	16.324	1.827865E-04	13	1.30	14	1.119770E-05	14	1.30
20	18.222	1.599410E-04	13	1.30	13	8.777269E-06	13	1.30
21	18.359	1.368739E-04	26	1.30	15	7.455591E-06	21	1.30
22	11.068	2.697224E-05	20	1.30	9	2.436911E-06	10	1.30
23	22.996	6.492598E-05	13	1.30	2	2.823328E-06	13	1.30
24	23.630	9.442960E-05	26	1.30	12	3.996248E-06	26	1.30
25	18.644	1.091909E-04	30	1.30	14	5.856597E-06	31	1.30
26	13.409	1.321813E-04	25	1.30	13	9.857546E-06	24	1.30
27	11.105	4.488177E-05	11	1.30	5	4.041625E-06	11	1.30
28	13.329	1.575422E-04	25	1.30	13	1.181945E-05	24	1.30
29	14.256	1.835240E-04	2	1.30	14	1.287368E-05	4	1.30
30	11.288	1.120748E-04	12	1.30	22	9.928813E-06	14	1.30
31	4.655	1.386505E-04	14	1.30	11	2.978671E-05	13	1.30
32	13.040	1.365541E-04	27	1.30	12	1.047188E-05	27	1.30
33	14.639	1.748655E-04	19	1.30	11	1.194498E-05	19	1.30
34	23.975	4.707967E-05	7	1.30	1	1.963688E-06	7	1.30
35	12.765	1.422380E-04	34	1.30	13	1.114285E-05	24	1.30
36	22.483	1.049598E-04	3	1.30	11	4.668496E-06	3	1.30
37	6.209	6.291724E-05	34	1.30	20	1.013308E-05	34	1.30
38	22.364	7.805302E-05	32	1.30	23	3.490051E-06	32	1.30
39	6.574	1.792892E-04	13	1.10	12	2.727128E-05	36	1.30
40	10.585	2.017320E-04	22	.90	13	1.905833E-05	24	1.30
41	24.000	1.652311E-04	29	1.30	14	6.884644E-06	29	1.30
42	14.007	1.901041E-04	22	1.10	12	1.357184E-05	22	1.30
43	13.018	1.500646E-04	8	1.30	8	1.152708E-05	24	1.30
44	5.513	1.921433E-04	36	1.10	12	3.485192E-05	14	1.30
45	7.204	1.929323E-04	14	1.30	13	2.678279E-05	14	1.30
46	12.712	1.838236E-04	28	.90	11	1.446045E-05	24	1.30
47	23.929	1.474618E-04	19	1.30	13	6.162452E-06	19	1.30
48	14.055	1.544817E-04	31	1.30	13	1.099132E-05	25	1.30
49	9.483	1.949361E-04	4	1.10	15	2.055534E-05	3	1.10

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
50	3.763	1.7[illegible]537E-04	14	1.30	11	4.776856E-05	14	1.30
51	8.174	2.012152E-04	21	1.10	12	2.461520E-05	22	1.30
52	12.680	1.591896E-04	23	1.10	12	1.255477E-05	23	1.30
53	18.176	1.898908E-04	21	1.30	13	1.044728E-05	24	1.30
54	8.587	1.615121E-04	22	1.10	13	1.880890E-05	22	1.30
55	15.168	1.522796E-04	29	1.30	13	1.003927E-05	2	1.30
56	10.534	1.405435E-04	1	1.30	16	1.334236E-05	1	1.30
57	7.407	1.922085E-04	2	1.30	11	2.595041E-05	2	1.30
58	4.772	1.563440E-04	36	1.30	12	3.276207E-05	35	1.30
59	8.587	1.843787E-04	2	1.30	5	2.147244E-05	2	1.30
60	8.543	1.709667E-04	1	1.30	21	2.001189E-05	32	1.30
61	7.186	1.002919E-04	22	1.30	24	1.395681E-05	23	1.30
62	14.803	1.692400E-04	23	1.10	14	1.143272E-05	3	1.30
63	12.778	1.976357E-04	4	1.30	16	1.546661E-05	4	1.30
64	14.811	1.761488E-04	3	1.10	14	1.189301E-05	32	1.30
65	13.341	2.008825E-04	27	1.30	15	1.505738E-05	27	1.30
66	17.441	2.018458E-04	15	1.10	10	1.157305E-05	12	1.30
67	10.185	2.037136E-04	18	.90	11	2.000081E-05	19	.90
68	8.888	2.012767E-04	18	1.10	13	2.264597E-05	19	1.30
69	12.373	1.992105E-04	27	1.30	15	1.609986E-05	26	1.30
70	5.611	1.758655E-04	34	1.30	8	3.134165E-05	34	1.30
71	10.118	2.118796E-04	24	1.10	14	2.093992E-05	24	1.30
72	8.915	1.993864E-04	36	.90	11	2.236514E-05	3	1.30
73	4.481	1.634859E-04	1	1.30	8	3.648417E-05	14	1.30
74	7.057	1.491540E-04	13	1.30	14	2.113518E-05	13	1.30
75	11.188	1.838378E-04	23	1.10	10	1.643224E-05	23	1.10
76	4.405	1.774068E-04	1	1.30	2	4.027834E-05	36	1.30
77	6.214	1.725158E-04	36	1.30	10	2.776375E-05	2	1.30
78	10.700	2.012152E-04	10	1.10	11	1.880513E-05	15	1.30
79	10.233	1.974823E-04	24	.90	11	1.929839E-05	24	1.30
80	11.659	1.679324E-04	1	1.30	14	1.440408E-05	34	1.30
81	10.354	2.145330E-04	32	1.10	11	2.071998E-05	36	1.30
82	7.850	1.844602E-04	34	1.30	8	2.349738E-05	36	1.30
83	7.858	1.809134E-04	1	1.30	8	2.302326E-05	4	1.30
84	9.236	1.823222E-04	14	1.30	9	1.974107E-05	14	1.30
85	11.181	1.745177E-04	16	1.10	14	1.560777E-05	35	1.30
86	4.107	1.719929E-04	2	1.30	15	4.187913E-05	1	1.30
87	10.495	1.895422E-04	15	1.10	9	1.806057E-05	1	1.30
88	8.675	1.918647E-04	24	.90	14	2.211726E-05	24	1.10
89	10.202	2.066957E-04	24	.90	10	2.026080E-05	1	1.30
90	8.858	1.963829E-04	4	1.10	11	2.217043E-05	14	1.30
91	8.505	2.040229E-04	21	1.10	13	2.398873E-05	21	1.30
92	10.933	2.471182E-04	3	.90	16	2.260193E-05	26	1.10
93	3.117	1.910622E-04	13	1.30	1	6.129765E-05	14	1.30
94	7.211	1.929323E-04	16	1.30	15	2.675564E-05	13	1.30
95	8.442	2.005869E-04	20	1.10	12	2.376164E-05	18	1.30
96	9.816	2.004284E-04	18	1.30	10	2.041853E-05	15	1.30
97	12.727	2.019782E-04	22	.90	15	1.587040E-05	18	1.10
98	13.433	2.062814E-04	31	.90	12	1.535618E-05	1	1.30
99	7.577	2.322577E-04	35	.90	12	3.065221E-05	35	1.30

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
100	5.303	2.173706E-04	3	.90	14	4.098963E-05	1	1.30
101	5.070	1.924785E-04	5	.90	11	3.796564E-05	1	1.30
102	9.998	1.553063E-04	1	1.30	3	1.553408E-05	2	1.30
103	10.989	2.256364E-04	12	.70	12	2.053277E-05	21	.90
104	19.630	2.151472E-04	9	.70	12	1.096028E-05	16	1.30
105	7.493	2.210488E-04	18	1.10	11	2.950082E-05	18	1.10
106	11.867	2.203610E-04	19	.70	11	1.856918E-05	20	1.10
107	15.124	2.411768E-04	22	.70	11	1.594615E-05	22	.70
108	6.213	2.318230E-04	4	.70	12	3.731016E-05	4	1.10
109	8.748	2.099769E-04	18	1.10	13	2.400319E-05	18	1.10
110	10.554	1.284541E-04	3	1.30	15	1.217122E-05	36	1.30
111	22.330	1.841636E-04	24	1.30	11	8.247444E-06	24	1.30
112	7.125	1.992105E-04	23	1.30	15	2.795817E-05	24	1.10
113	10.814	2.397748E-04	32	.90	12	2.217206E-05	32	1.30
114	5.288	2.544065E-04	2	.70	13	4.811340E-05	36	1.30
115	8.323	2.292978E-04	18	.70	12	2.755113E-05	1	1.30
116	7.044	2.293017E-04	3	.90	13	3.255166E-05	36	1.30
117	4.585	2.346786E-04	35	.90	13	5.117967E-05	35	1.30
118	8.649	2.470936E-04	36	.70	11	2.857033E-05	2	1.10
119	7.917	1.679655E-04	2	1.30	24	2.121711E-05	2	1.30
120	5.785	2.570944E-04	5	.70	13	4.443775E-05	2	1.30
121	11.632	2.294926E-04	7	.70	15	1.973008E-05	36	1.30
122	10.646	2.261253E-04	8	.70	11	2.124002E-05	16	1.10
123	11.173	2.329887E-04	31	.70	11	2.085261E-05	29	.90
124	8.672	2.105461E-04	26	1.10	13	2.427945E-05	36	1.30
125	4.446	2.443998E-04	36	.70	10	5.497434E-05	36	1.10
126	12.611	2.397785E-04	5	.70	12	1.901314E-05	32	.70
127	11.276	2.411948E-04	30	.70	11	2.138964E-05	28	1.10
128	5.543	2.304614E-04	33	1.10	9	4.157378E-05	35	1.10
129	8.907	2.223818E-04	16	1.10	11	2.496648E-05	14	.90
130	11.140	2.453791E-04	6	.70	13	2.202654E-05	6	.90
131	6.252	1.938878E-04	14	.90	10	3.101450E-05	14	1.30
132	9.307	2.279471E-04	13	.70	12	2.449207E-05	21	1.30
133	16.751	2.217384E-04	21	.70	11	1.323715E-05	23	.90
134	10.432	2.423559E-04	16	.90	12	2.323127E-05	14	1.30
135	8.520	2.096587E-04	19	.90	12	2.460853E-05	19	1.10
136	3.797	2.567366E-04	14	.70	10	6.761307E-05	14	1.10
137	9.761	2.180139E-04	19	1.10	11	2.233463E-05	19	1.10
138	10.513	2.344668E-04	33	.70	12	2.230202E-05	21	.70
139	10.860	2.519569E-04	14	.70	10	2.320082E-05	14	.90
140	10.994	2.341451E-04	22	.70	12	2.129713E-05	22	1.10
141	9.346	2.418857E-04	24	.70	10	2.588251E-05	24	.70
142	9.508	2.273433E-04	7	.90	14	2.391167E-05	19	1.10
143	9.814	2.496746E-04	7	.50	13	2.544156E-05	23	.90
144	9.094	2.361197E-04	16	.50	11	2.596329E-05	24	1.10
145	13.254	2.576478E-04	10	.70	11	1.943863E-05	18	.70
146	14.083	2.502460E-04	12	.50	10	1.776934E-05	13	.70
147	9.874	2.568924E-04	29	.70	13	2.601639E-05	20	.70
148	7.436	2.466317E-04	21	.70	10	3.316925E-05	22	.90
149	8.873	2.764393E-04	36	.70	13	3.115683E-05	36	1.10

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
150	9.876	2.727857E-04	13	.70	10	2.762135E-05	10	.90
151	5.295	2.800253E-04	1	.70	11	5.288978E-05	1	1.10
152	4.296	2.345403E-04	36	.70	11	5.459450E-05	36	1.30
153	13.054	2.344025E-04	34	.70	12	1.795694E-05	32	1.30
154	13.057	2.350973E-04	27	.70	11	1.800550E-05	25	.90
155	10.274	2.407631E-04	2	.50	12	2.343393E-05	18	1.30
156	10.626	2.371746E-04	3	.50	12	2.231942E-05	20	1.10
157	6.702	2.476241E-04	21	.70	13	3.694991E-05	22	.70
158	10.339	2.449228E-04	24	.50	11	2.368879E-05	36	1.30
159	10.053	2.421739E-04	36	.70	11	2.409037E-05	36	1.10
160	13.545	2.305107E-04	33	.90	12	1.701801E-05	16	.90
161	10.574	2.532832E-04	19	.70	10	2.395356E-05	2	1.30
162	6.055	2.599705E-04	36	.70	10	4.293706E-05	3	1.10
163	7.497	2.295483E-04	18	1.10	11	3.061786E-05	18	1.10
164	9.424	2.468160E-04	22	.70	13	2.618882E-05	23	1.10
165	10.194	2.249081E-04	18	.90	11	2.206303E-05	18	1.10
166	9.156	2.270349E-04	23	1.10	11	2.479723E-05	23	1.10
167	6.836	2.438285E-04	35	1.10	13	3.566791E-05	35	1.30
168	9.701	2.573338E-04	34	.90	13	2.652648E-05	23	.70
169	7.172	2.727008E-04	2	.70	12	3.802110E-05	34	1.30
170	5.443	2.532410E-04	33	.70	11	4.652241E-05	36	1.30
171	6.431	2.672731E-04	33	.90	12	4.155755E-05	35	1.30
172	5.095	2.371659E-04	35	1.10	15	4.654904E-05	35	1.30
173	7.260	2.642151E-04	33	.90	12	3.639092E-05	35	1.30
174	8.021	2.345290E-04	36	.90	11	2.923880E-05	35	1.30
175	13.100	2.364481E-04	8	.90	15	1.804947E-05	34	1.10
176	10.705	2.481657E-04	25	.50	13	2.318201E-05	21	.90
177	7.862	2.200430E-04	2	.90	13	2.798914E-05	36	1.30
178	9.060	2.572759E-04	1	.70	13	2.839822E-05	36	1.30
179	10.938	2.470686E-04	31	.70	12	2.258794E-05	31	.70
180	10.703	2.356202E-04	24	1.10	9	2.201503E-05	36	1.10
181	3.952	2.350376E-04	33	1.10	14	5.946580E-05	35	1.30
182	9.010	2.386209E-04	36	.90	13	2.648522E-05	35	1.30
183	6.326	2.303684E-04	2	.90	12	3.641381E-05	2	1.10
184	11.421	2.554597E-04	22	.70	11	2.236664E-05	2	1.10
185	6.553	2.350376E-04	23	1.10	11	3.586921E-05	23	.90
186	11.105	2.582284E-04	24	.70	11	2.325281E-05	1	1.30
187	7.163	2.645173E-04	3	.70	13	3.693072E-05	35	1.10
188	4.381	2.786805E-04	36	.70	13	6.361766E-05	36	1.30
189	6.595	2.532400E-04	35	.70	11	3.840073E-05	34	1.30
190	9.963	2.640032E-04	5	.70	13	2.649806E-05	3	1.10
191	8.289	2.368208E-04	15	.90	12	2.856991E-05	15	.90
192	14.864	2.246751E-04	19	1.10	10	1.511584E-05	20	1.10
193	8.812	2.328727E-04	26	1.10	17	2.642679E-05	16	1.30
194	13.096	2.640944E-04	21	.50	11	2.016636E-05	20	.70
195	7.313	2.774791E-04	2	.70	13	3.794522E-05	2	1.10
196	3.796	2.709172E-04	1	.70	13	7.137190E-05	2	1.30
197	4.175	2.437268E-04	1	1.10	13	5.837236E-05	36	1.30
198	7.063	2.589225E-04	35	.90	10	3.665670E-05	34	1.30
199	12.365	2.518734E-04	1	.90	12	2.037066E-05	30	1.10

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
200	8.337	2.291750E-04	1	.70	12	2.748896E-05	36	.90
201	11.391	2.635715E-04	1	.70	13	2.313783E-05	1	.90
202	14.764	2.308371E-04	23	1.10	11	1.563553E-05	23	1.10
203	9.353	2.362516E-04	23	1.10	13	2.525986E-05	23	1.10
204	11.859	2.420894E-04	31	.70	12	2.041457E-05	2	.90
205	6.616	2.720125E-04	2	.70	13	4.111166E-05	35	1.30
206	9.749	2.409668E-04	32	.70	11	2.471721E-05	34	1.30
207	8.051	2.642151E-04	35	.90	11	3.281651E-05	35	1.30
208	8.224	2.555524E-04	36	.90	12	3.107306E-05	36	1.30
209	12.150	2.680950E-04	1	.70	12	2.206585E-05	36	1.30
210	11.921	2.539614E-04	20	.70	10	2.130319E-05	23	1.10
211	17.377	1.762588E-04	24	1.30	17	1.014309E-05	24	1.30
212	11.089	2.306511E-04	23	1.10	13	2.079923E-05	23	1.10
213	14.015	2.161392E-04	31	1.30	13	1.542221E-05	24	1.30
214	11.084	2.432170E-04	23	.70	13	2.194278E-05	23	.90
215	11.269	2.526156E-04	36	.90	14	2.241599E-05	25	.90
216	8.167	2.425698E-04	30	1.10	13	2.970023E-05	22	.90
217	12.550	2.364481E-04	20	.90	11	1.884013E-05	19	.90
218	10.392	2.543278E-04	36	.70	13	2.447373E-05	18	1.30
219	10.858	2.480205E-04	2	.70	13	2.284127E-05	2	.70
220	10.807	2.583100E-04	25	.70	13	2.390123E-05	24	.70
221	8.140	1.696263E-04	24	1.30	16	2.083881E-05	23	1.30
222	18.995	1.762899E-04	17	1.30	17	9.280842E-06	33	1.30
223	12.482	2.489460E-04	17	.70	11	1.994518E-05	17	.70
224	10.346	2.438686E-04	31	.70	13	2.357209E-05	22	.90
225	12.530	2.180668E-04	10	.90	11	1.740323E-05	7	1.30
226	12.219	2.523227E-04	6	.70	13	2.065006E-05	6	.70
227	17.252	1.785220E-04	15	.90	11	1.034793E-05	25	1.30
228	10.807	2.203319E-04	4	.70	14	2.038742E-05	13	1.30
229	19.107	7.350456E-05	30	1.30	21	3.847008E-06	30	1.30
230	6.935	1.585180E-04	32	1.30	12	2.285738E-05	32	1.30
231	19.649	2.027136E-04	13	1.30	14	1.031660E-05	13	1.30
232	9.563	2.376912E-04	3	.70	11	2.485640E-05	24	1.10
233	10.768	2.362065E-04	25	1.10	10	2.193548E-05	3	1.10
234	12.871	2.288746E-04	33	.90	13	1.778275E-05	6	1.30
235	8.737	2.510877E-04	15	.70	13	2.873960E-05	16	.90
236	14.594	2.578443E-04	3	.70	12	1.766767E-05	35	1.10
237	15.076	2.159050E-04	33	.90	14	1.432086E-05	22	1.10
238	22.699	2.389093E-04	9	.70	12	1.052527E-05	9	.70
239	8.344	2.361197E-04	24	.50	11	2.829970E-05	23	.90
240	12.064	2.250852E-04	35	1.30	10	1.865787E-05	36	1.30
241	6.769	2.555524E-04	35	.90	11	3.775087E-05	1	1.30
242	13.306	2.322065E-04	19	.90	14	1.745082E-05	26	1.30
243	12.480	2.399019E-04	27	.90	14	1.922286E-05	27	.90
244	24.000	2.105934E-04	19	.90	12	8.774833E-06	19	.90
245	8.397	2.143756E-04	26	1.10	10	2.553058E-05	35	1.30
246	13.198	2.765153E-04	36	.70	11	2.095145E-05	1	1.30
247	10.437	2.509195E-04	20	.50	11	2.404185E-05	20	.90
248	12.964	2.434556E-04	20	.50	12	1.877887E-05	31	1.30
249	16.101	2.549206E-04	25	.70	12	1.583256E-05	13	1.10

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
250	18.506	2.563670E-04	30	.90	12	1.385290E-05	33	1.10
251	7.456	1.965136E-04	3	1.30	13	2.635810E-05	3	1.30
252	7.343	2.119534E-04	34	1.30	9	2.886393E-05	34	1.30
253	8.062	2.283085E-04	26	.90	12	2.831982E-05	20	1.30
254	15.852	2.215303E-04	23	.90	11	1.397482E-05	21	1.10
255	7.678	2.191844E-04	21	1.30	11	2.854614E-05	24	1.10
256	19.773	2.364481E-04	25	.90	12	1.195821E-05	21	1.30
257	10.936	2.416396E-04	20	1.10	12	2.209654E-05	20	1.10
258	7.247	2.227095E-04	25	.90	13	3.072928E-05	23	.90
259	9.539	2.555524E-04	33	.90	15	2.679014E-05	35	1.30
260	6.822	1.943166E-04	34	1.10	14	2.848336E-05	34	1.30
261	6.948	1.792378E-04	2	1.30	15	2.579585E-05	34	1.30
262	10.014	2.196644E-04	15	.90	12	2.193632E-05	1	1.30
263	8.507	2.309951E-04	18	1.10	13	2.715265E-05	18	1.10
264	8.731	2.159760E-04	24	.90	14	2.473575E-05	20	1.30
265	12.429	1.962401E-04	18	1.30	10	1.578888E-05	16	1.30
266	7.683	2.017112E-04	3	1.30	16	2.625470E-05	3	1.30
267	12.278	2.362065E-04	27	1.10	12	1.923885E-05	24	1.10
268	12.791	1.877084E-04	21	1.10	9	1.467510E-05	17	1.30
269	18.494	1.799030E-04	28	1.30	14	9.727614E-06	16	1.30
270	17.457	2.088159E-04	24	.90	11	1.196185E-05	26	1.10
271	11.459	2.492652E-04	31	.90	15	2.175239E-05	21	1.30
272	9.157	1.578904E-04	32	1.30	18	1.724222E-05	33	1.30
273	7.225	1.257554E-04	31	1.30	15	1.740539E-05	31	1.30
274	10.337	1.970350E-04	4	1.30	13	1.906200E-05	4	1.30
275	14.913	1.856702E-04	16	1.30	8	1.244981E-05	11	1.10
276	13.696	2.097078E-04	12	.90	12	1.531108E-05	21	1.10
277	13.680	1.904590E-04	12	1.10	14	1.392216E-05	22	1.30
278	11.120	2.081052E-04	18	1.10	13	1.871519E-05	18	1.10
279	13.004	1.888948E-04	11	1.10	12	1.452583E-05	36	1.30
280	10.460	1.986102E-04	21	1.10	11	1.898702E-05	21	1.30
281	10.910	2.038541E-04	16	1.10	14	1.868435E-05	17	1.10
282	12.281	2.238850E-04	36	1.10	14	1.823071E-05	24	.90
283	8.121	1.943785E-04	23	1.30	13	2.393467E-05	22	1.30
284	10.900	2.166644E-04	21	1.30	15	1.987748E-05	21	1.30
285	15.002	2.027136E-04	21	1.30	13	1.351254E-05	21	1.10
286	8.437	1.740364E-04	5	1.30	14	2.062692E-05	4	1.30
287	17.915	1.895979E-04	4	1.10	13	1.058306E-05	24	1.30
288	9.742	1.935005E-04	24	.90	12	1.986259E-05	25	1.30
289	14.485	2.116995E-04	21	.90	11	1.461518E-05	21	1.10
290	12.017	1.976332E-04	24	1.10	11	1.644614E-05	27	1.30
291	12.640	2.009331E-04	15	.90	10	1.589720E-05	24	1.30
292	11.537	1.963663E-04	22	1.10	11	1.701996E-05	12	1.30
293	6.501	1.959790E-04	24	.90	11	3.014757E-05	24	1.30
294	10.130	1.986102E-04	24	1.10	11	1.960683E-05	23	1.10
295	11.255	2.015922E-04	25	1.10	12	1.791201E-05	25	1.30
296	13.848	2.050056E-04	23	1.30	14	1.480443E-05	23	1.10
297	5.081	1.745787E-04	15	1.30	6	3.436194E-05	15	1.30
298	13.258	2.099769E-04	16	1.10	10	1.583725E-05	20	1.30
299	12.278	2.186764E-04	25	1.10	12	1.780973E-05	18	1.30

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
300	13.148	1.794491E-04	25	1.10	10	1.364875E-05	25	1.10
301	14.300	1.963663E-04	25	1.10	12	1.373145E-05	24	1.10
302	9.261	1.881939E-04	23	1.10	11	2.032113E-05	22	1.30
303	17.037	2.147980E-04	23	.90	11	1.260737E-05	25	1.30
304	8.972	2.114408E-04	23	1.30	15	2.356719E-05	23	1.30
305	15.089	1.927619E-04	18	1.10	10	1.277531E-05	22	1.30
306	14.919	1.845272E-04	2	1.30	8	1.236892E-05	16	1.30
307	15.044	1.978708E-04	12	1.10	11	1.315249E-05	18	1.30
308	10.196	2.123029E-04	26	1.30	15	2.082126E-05	26	1.30
309	10.417	1.781222E-04	15	1.10	11	1.709977E-05	22	1.30
310	10.313	1.752564E-04	26	1.10	12	1.699406E-05	23	1.30
311	7.054	2.188101E-04	1	.70	12	3.101817E-05	1	1.30
312	7.280	1.854950E-04	14	1.30	5	2.547925E-05	14	1.30
313	18.801	1.338785E-04	19	1.30	15	7.120910E-06	23	1.30
314	13.923	1.637709E-04	23	1.30	14	1.176251E-05	24	1.30
315	7.608	1.896669E-04	4	1.30	12	2.492974E-05	1	1.30
316	4.337	1.777056E-04	1	1.30	15	4.097511E-05	1	1.30
317	5.983	1.929933E-04	4	1.30	12	3.225804E-05	3	1.30
318	12.051	2.044532E-04	22	1.30	12	1.696534E-05	21	1.30
319	12.245	1.983903E-04	22	.90	11	1.620200E-05	22	1.10
320	16.328	1.434718E-04	22	1.30	14	8.786942E-06	31	1.30
321	10.802	1.954408E-04	1	1.30	15	1.809302E-05	3	1.30
322	3.876	1.764859E-04	17	1.30	12	4.553319E-05	15	1.30
323	12.059	1.647928E-04	26	1.30	14	1.366528E-05	26	1.30
324	6.007	1.848756E-04	3	1.30	9	3.077527E-05	3	1.10
325	9.453	1.427340E-04	14	1.30	11	1.509938E-05	13	1.30
326	6.837	1.540876E-04	18	1.30	13	2.253892E-05	15	1.30
327	19.208	1.561491E-04	26	1.30	14	8.129391E-06	22	1.30
328	17.774	8.803893E-05	36	1.30	24	4.953256E-06	36	1.30
329	3.854	1.708447E-04	14	1.30	24	4.432717E-05	15	1.30
330	2.636	1.786989E-04	15	1.30	11	6.778820E-05	15	1.30
331	10.135	1.215405E-04	17	1.30	1	1.199234E-05	17	1.30
332	21.004	1.300728E-04	14	1.30	9	6.192658E-06	19	1.30
333	11.980	1.013153E-04	21	1.30	10	8.457327E-06	19	1.30
334	22.818	1.568437E-04	12	1.30	14	6.873594E-06	12	1.30
335	16.063	3.200501E-05	27	1.30	13	1.992517E-06	21	1.30
336	21.302	1.364150E-04	33	1.30	10	6.403926E-06	18	1.30
337	8.308	1.777317E-04	1	1.30	15	2.139182E-05	33	1.30
338	6.169	1.688049E-04	14	1.30	20	2.736349E-05	14	1.30
339	15.056	1.215206E-04	14	1.30	9	8.071343E-06	18	1.30
340	14.233	1.020649E-04	21	1.30	11	7.170809E-06	22	1.30
341	22.846	1.033638E-04	1	1.30	9	4.524453E-06	22	1.30
342	18.416	1.111688E-04	23	1.30	12	6.036689E-06	2	1.30
343	10.572	1.834735E-04	24	1.30	11	1.735536E-05	2	1.30
344	23.154	1.473523E-04	28	1.30	11	6.363889E-06	28	1.30
345	13.607	1.472995E-04	6	1.30	22	1.082548E-05	2	1.30
346	7.765	1.806061E-04	15	1.30	11	2.325816E-05	16	1.30
347	19.774	1.137415E-04	20	1.30	13	5.751992E-06	11	1.30
348	17.063	1.028356E-04	2	1.30	11	6.026974E-06	25	1.30
349	12.811	1.699564E-04	9	1.30	11	1.326636E-05	16	1.30

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
350	23.761	1.094758E-04	25	1.30	10	4.607394E-06	25	1.30
351	22.716	1.181741E-04	13	1.30	9	5.202206E-06	27	1.30
352	15.374	1.111530E-04	20	1.30	11	7.230150E-06	34	1.30
353	19.313	1.251454E-04	2	1.30	9	6.479821E-06	24	1.30
354	15.675	1.744899E-04	28	1.30	14	1.113191E-05	28	1.30
355	9.010	1.062693E-04	24	1.30	12	1.179440E-05	24	1.30
356	8.098	1.094311E-04	15	1.30	14	1.351348E-05	15	1.30
357	16.813	1.135398E-04	22	1.30	14	6.753088E-06	22	1.30
358	23.453	9.401183E-05	23	1.30	13	4.008521E-06	23	1.30
359	20.052	5.009686E-05	11	1.30	16	2.498349E-06	16	1.30
360	12.284	1.808848E-05	18	1.30	16	1.472484E-06	12	1.30
361	12.757	1.829103E-04	16	1.30	24	1.433784E-05	20	1.30
362	9.696	1.704555E-04	15	1.10	1	1.758057E-05	15	1.30
363	17.525	1.023109E-04	32	1.30	11	5.837989E-06	29	1.30
364	18.530	1.824605E-04	11	1.30	10	9.846974E-06	12	1.30
365	21.601	1.615292E-04	4	1.30	10	7.477855E-06	4	1.30

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= 7.0890E-06 DIRECTION= 36 DISTANCE= 1.3 KM # OF CALMS FOR THE PERIOD: 32

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	1.43119E-06 C	3.32499E-06 C	4.83695E-06 C	5.75992E-06 C	6.14606E-06 C
2	1.30338E-06 C	2.99603E-06 C	4.33668E-06 C	5.15141E-06 C	5.50035E-06 C
3	1.09508E-06 C	2.52197E-06 C	3.57509E-06 C	4.17009E-06 C	4.39953E-06 C
4	7.53169E-07 C	1.76796E-06 C	2.55664E-06 C	3.06387E-06 C	3.31814E-06 C
5	5.63624E-07 C	1.33649E-06 C	1.95712E-06 C	2.42036E-06 C	2.71875E-06 C
6	4.11309E-07 C	1.02884E-06 C	1.52324E-06 C	1.92515E-06 C	2.21303E-06 C
7	3.22334E-07 C	7.60457E-07 C	1.07332E-06 C	1.33850E-06 C	1.54316E-06 C
8	2.99080E-07 C	6.56411E-07 C	8.68596E-07 C	1.04124E-06 C	1.17410E-06 C
9	3.05897E-07 C	6.68964E-07 C	8.68712E-07 C	1.01972E-06 C	1.12711E-06 C
10	3.08809E-07 C	7.04516E-07 C	9.27063E-07 C	1.07959E-06 C	1.16926E-06 C
11	3.50138E-07 C	8.46687E-07 C	1.15618E-06 C	1.36897E-06 C	1.49136E-06 C
12	5.36338E-07 C	1.32780E-06 C	1.83614E-06 C	2.13536E-06 C	2.26654E-06 C
13	7.31801E-07 C	1.84329E-06 C	2.59807E-06 C	3.01279E-06 C	3.16118E-06 C
14	8.17102E-07 C	2.12066E-06 C	3.07268E-06 C	3.59876E-06 C	3.78131E-06 C
15	7.27914E-07 C	1.90681E-06 C	2.75178E-06 C	3.21842E-06 C	3.37910E-06 C
16	7.02733E-07 C	1.74420E-06 C	2.40035E-06 C	2.74080E-06 C	2.84415E-06 C
17	7.62298E-07 C	1.83528E-06 C	2.46534E-06 C	2.78304E-06 C	2.86932E-06 C
18	9.22331E-07 C	2.17723E-06 C	2.88387E-06 C	3.23462E-06 C	3.32773E-06 C
19	1.00991E-06 C	2.25029E-06 C	2.89003E-06 C	3.18835E-06 C	3.25087E-06 C
20	1.16075E-06 C	2.47736E-06 C	3.09892E-06 C	3.34045E-06 C	3.33748E-06 C
21	1.37306E-06 C	2.92884E-06 C	3.65504E-06 C	3.92703E-06 C	3.91450E-06 C
22	1.55344E-06 C	3.35516E-06 C	4.20902E-06 C	4.53663E-06 C	4.53760E-06 C
23	1.63436E-06 C	3.61376E-06 C	4.58445E-06 C	4.95354E-06 C	4.95414E-06 C
24	1.49503E-06 C	3.40065E-06 C	4.39546E-06 C	4.80298E-06 C	4.83989E-06 C
25	1.11741E-06 C	2.52124E-06 C	3.22577E-06 C	3.50528E-06 C	3.52646E-06 C
26	7.70587E-07 C	1.71940E-06 C	2.19472E-06 C	2.39309E-06 C	2.41738E-06 C
27	6.01706E-07 C	1.35960E-06 C	1.75991E-06 C	1.94316E-06 C	1.98136E-06 C
28	4.94496E-07 C	1.11323E-06 C	1.43215E-06 C	1.57933E-06 C	1.61321E-06 C
29	4.67641E-07 C	1.03899E-06 C	1.33358E-06 C	1.47456E-06 C	1.51026E-06 C
30	5.43022E-07 C	1.18019E-06 C	1.50847E-06 C	1.67363E-06 C	1.72374E-06 C
31	6.10289E-07 C	1.33315E-06 C	1.73332E-06 C	1.96212E-06 C	2.05709E-06 C
32	6.80631E-07 C	1.51559E-06 C	2.00749E-06 C	2.29299E-06 C	2.41248E-06 C
33	8.17519E-07 C	1.85668E-06 C	2.54550E-06 C	2.96567E-06 C	3.14972E-06 C
34	9.77727E-07 C	2.25060E-06 C	3.14796E-06 C	3.72205E-06 C	3.99626E-06 C
35	1.38864E-06 C	3.24072E-06 C	4.65255E-06 C	5.56796E-06 C	6.00846E-06 C
36	1.58704E-06 C	3.72814E-06 C	5.44785E-06 C	6.56101E-06 C	7.08897E-06 C

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 7.1372E-05 DIRECTION= 2 DISTANCE= 1.3 KM DAY=196

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	2.9645E-05 (151)	4.5019E-05 (151)	5.2296E-05 (151)	5.2890E-05 (151)	5.0056E-05 (151)
2	2.5344E-05 (151)	4.6553E-05 (196)	6.3966E-05 (196)	7.1091E-05 (196)	7.1372E-05 (196)
3	2.3496E-05 (196)	4.5532E-05 (196)	5.7729E-05 (196)	6.0860E-05 (196)	5.8956E-05 (196)
4	1.9858E-05 (108)	3.0683E-05 (108)	3.6207E-05 (108)	3.7310E-05 (108)	3.5870E-05 (108)
5	2.0601E-05 (195)	3.2158E-05 (195)	3.6806E-05 (195)	3.7205E-05 (195)	3.5346E-05 (195)
6	1.2825E-05 (130)	2.0708E-05 (130)	2.2027E-05 (130)	2.0509E-05 (130)	1.8155E-05 (130)
7	1.0498E-05 (143)	1.2387E-05 (130)	1.5903E-05 (130)	1.6696E-05 (130)	1.7403E-05 (225)
8	1.1836E-05 (122)	1.6370E-05 (122)	1.3825E-05 (122)	1.1572E-05 (130)	1.1533E-05 (130)
9	1.0642E-05 (150)	1.9808E-05 (150)	2.2970E-05 (150)	2.2763E-05 (150)	2.1102E-05 (150)
10	1.3052E-05 (150)	2.4421E-05 (150)	2.7621E-05 (150)	2.6377E-05 (150)	2.3557E-05 (150)
11	8.0688E-06 (146)	1.2198E-05 (150)	1.3666E-05 (225)	1.4803E-05 (262)	1.5323E-05 (262)
12	1.3413E-05 (146)	1.4464E-05 (146)	2.2435E-05 (93)	2.7932E-05 (93)	2.9783E-05 (93)
13	1.4559E-05 (146)	2.8791E-05 (136)	3.7051E-05 (136)	3.9704E-05 (136)	3.9076E-05 (136)
14	2.9481E-05 (136)	5.4718E-05 (136)	6.6472E-05 (136)	6.7613E-05 (136)	6.3756E-05 (136)
15	1.3408E-05 (235)	2.7444E-05 (330)	4.9584E-05 (330)	6.2793E-05 (330)	6.7788E-05 (330)
16	1.5659E-05 (235)	2.8104E-05 (235)	2.8740E-05 (235)	2.7583E-05 (191)	2.6578E-05 (191)
17	1.4670E-05 (223)	2.4037E-05 (235)	2.8187E-05 (235)	2.8498E-05 (235)	2.6882E-05 (235)
18	1.5141E-05 (145)	2.1976E-05 (105) C	2.8511E-05 (163)	3.0618E-05 (163)	2.9670E-05 (163)
19	1.4258E-05 (145)	2.0914E-05 (247)	2.3856E-05 (135)	2.4609E-05 (135)	2.2905E-05 (135)
20	1.5749E-05 (147)	2.6016E-05 (147)	2.5806E-05 (147)	2.6897E-05 (253)	2.8320E-05 (253)
21	2.4285E-05 (157)	3.2034E-05 (157)	3.0207E-05 (148)	2.8459E-05 (148)	2.5852E-05 (148)
22	2.5616E-05 (157)	3.6950E-05 (157)	3.3777E-05 (157)	2.9904E-05 (148)	2.5622E-05 (148)
23	2.1366E-05 (168)	3.1402E-05 (185)	3.5869E-05 (185)	3.4322E-05 (185)	3.0624E-05 (185)
24	1.5738E-05 (239)	2.5883E-05 (141)	2.7810E-05 (258)	2.8546E-05 (255)	3.0148E-05 (293)
25	1.3419E-05 (220)	2.1983E-05 (215)	2.2416E-05 (215)	2.3316E-05 (144)	2.2224E-05 (144)
26	1.1818E-05 (154)	1.8402E-05 (215)	1.9983E-05 (92)	2.2602E-05 (92)	2.2559E-05 (92)
27	1.2365E-05 (154)	1.6814E-05 (243)	1.9223E-05 (243)	1.8078E-05 (243)	1.6446E-05 (290)
28	1.1396E-05 (143)	1.6982E-05 (127)	2.0687E-05 (127)	2.1390E-05 (127)	2.0385E-05 (127)
29	9.1425E-06 (127)	1.8213E-05 (123)	2.0853E-05 (123)	2.0472E-05 (123)	1.8803E-05 (123)
30	9.6984E-06 (141)	1.6528E-05 (127)	1.9207E-05 (199)	2.0371E-05 (199)	1.9409E-05 (199)
31	1.5327E-05 (179)	2.2588E-05 (179)	2.2398E-05 (179)	1.9847E-05 (179)	2.1043E-05 (172)
32	1.2762E-05 (189)	2.1433E-05 (189)	2.4103E-05 (189)	2.3537E-05 (189)	2.2857E-05 (230)
33	1.1720E-05 (205)	1.9948E-05 (171)	2.5675E-05 (171)	2.7774E-05 (171)	2.7524E-05 (171)
34	1.3012E-05 (183)	2.4565E-05 (189)	3.3080E-05 (189)	3.7413E-05 (189)	3.8401E-05 (189)
35	1.6422E-05 (125)	3.1269E-05 (181)	4.6819E-05 (181)	5.6042E-05 (181)	5.9466E-05 (181)
36	2.3840E-05 (125)	4.3362E-05 (125)	5.7042E-05 (188)	6.3190E-05 (188)	6.3618E-05 (188)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 6.1298E-05 DIRECTION= 14 DISTANCE= 1.3 KM DAY= 93

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	1.9251E-05 (162)	3.3688E-05 (152)	4.4622E-05 (152)	4.8253E-05 (152)	4.7407E-05 (152)
2	2.1781E-05 (196)	3.6333E-05 (151)	3.9882E-05 (151)	4.1670E-05 (120)	4.4438E-05 (120)
3	1.5596E-05 (151)	2.9083E-05 (162)	3.9558E-05 (162)	4.2937E-05 (162)	4.2193E-05 (162)
4	1.6690E-05 (195)	2.7926E-05 (195)	3.3998E-05 (195)	3.5873E-05 (195)	3.5193E-05 (195)
5	1.8613E-05 (120)	2.4796E-05 (120)	2.5010E-05 (120)	2.3409E-05 (141)	2.5647E-05 (141)
6	1.0973E-05 (226)	2.0650E-05 (226)	1.8464E-05 (226)	1.7120E-05 (234)	1.7783E-05 (234)
7	7.7963E-06 (122)	1.2010E-05 (226)	1.2943E-05 (225)	1.5753E-05 (225)	1.6003E-05 (130)
8	9.3727E-06 (143)	9.1653E-06 (147)	1.0380E-05 (130)	1.1069E-05 (122)	8.8353E-06 (122)
9	1.0180E-05 (122)	1.3948E-05 (122)	1.3843E-05 (274)	1.7411E-05 (274)	1.8976E-05 (274)
10	8.1851E-06 (145)	1.0737E-05 (145)	1.3119E-05 (243)	1.4887E-05 (243)	1.5178E-05 (243)
11	7.7613E-06 (103)	1.1434E-05 (103)	1.2672E-05 (262)	1.4544E-05 (225)	1.3872E-05 (225)
12	1.0108E-05 (132)	1.3656E-05 (132)	1.9282E-05 (130)	2.1750E-05 (130)	2.1912E-05 (130)
13	1.4448E-05 (136)	1.8336E-05 (131)	2.9458E-05 (93)	3.5601E-05 (93)	3.7245E-05 (93)
14	1.5278E-05 (139)	2.6970E-05 (93)	4.7137E-05 (93)	5.8018E-05 (93)	6.1298E-05 (93)
15	1.2525E-05 (191)	2.4267E-05 (191)	3.1998E-05 (329)	4.0856E-05 (329)	4.5533E-05 (322)
16	1.1052E-05 (223)	2.0660E-05 (191)	2.6232E-05 (191)	2.5958E-05 (235)	2.6427E-05 (193)
17	1.1982E-05 (235)	1.9945E-05 (223)	2.1748E-05 (185)	2.3637E-05 (191)	2.6628E-05 (191)
18	1.2730E-05 (223)	2.1103E-05 (163)	2.7995E-05 (105) C	2.9501E-05 (105) C	2.8584E-05 (105) C
19	1.4148E-05 (247)	1.8909E-05 (147)	2.3146E-05 (142)	2.3912E-05 (142)	2.2646E-05 (68)
20	1.5570E-05 (247)	2.3454E-05 (247)	2.4267E-05 (164)	2.6043E-05 (164)	2.6148E-05 (164)
21	1.6111E-05 (148)	2.8969E-05 (148)	2.6075E-05 (157)	2.4284E-05 (191)	2.4665E-05 (263)
22	1.9445E-05 (168)	3.1964E-05 (148)	3.3169E-05 (148)	2.9539E-05 (157)	2.5567E-05 (157)
23	1.6244E-05 (185)	2.6570E-05 (239)	3.0729E-05 (258)	2.9715E-05 (258)	2.7150E-05 (18)
24	1.4697E-05 (141)	2.3901E-05 (220)	2.5539E-05 (255)	2.8242E-05 (293)	2.8425E-05 (255)
25	1.3360E-05 (176)	2.0356E-05 (220)	2.2124E-05 (144)	1.9650E-05 (215)	1.9863E-05 (288)
26	1.1446E-05 (215)	1.7696E-05 (154)	1.8288E-05 (215)	1.9449E-05 (308)	2.0821E-05 (308)
27	1.0336E-05 (143)	1.5815E-05 (154)	1.5291E-05 (215)	1.5492E-05 (290)	1.5797E-05 (243)
28	8.2218E-06 (154)	1.3994E-05 (143)	1.6946E-05 (123)	1.7070E-05 (123)	1.5822E-05 (123)
29	8.8592E-06 (123)	1.8133E-05 (127)	1.8791E-05 (127)	1.8090E-05 (199)	1.7489E-05 (199)
30	9.2453E-06 (115)	1.5448E-05 (175)	1.8033E-05 (179)	1.9048E-05 (179)	1.8903E-05 (179)
31	9.1918E-06 (141)	1.3251E-05 (208)	1.5781E-05 (172)	1.9623E-05 (172)	1.8779E-05 (248)
32	1.2734E-05 (179)	1.9185E-05 (179)	1.9913E-05 (113)	2.1948E-05 (113)	2.2172E-05 (113)
33	1.0365E-05 (169)	1.8423E-05 (173)	2.3090E-05 (173)	2.6479E-05 (197)	2.7327E-05 (197)
34	1.2749E-05 (170)	2.3480E-05 (183)	3.0935E-05 (198)	3.5713E-05 (198)	3.8021E-05 (169)
35	1.4496E-05 (128)	2.9985E-05 (188)	4.2849E-05 (188)	4.9479E-05 (188)	5.1266E-05 (188)
36	1.9917E-05 (188)	4.2363E-05 (188)	5.2925E-05 (125)	5.4974E-05 (125)	5.8372E-05 (197)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 8-HOUR CONC= 1.3816E-04 DIRECTION= 36 DISTANCE= 1.1 KM DAY=188 TIME PERIOD= 2

HIGHEST 8-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	7.9920E-05 (151, 2)	1.0272E-04 (151, 2)	1.0500E-04 (151, 2)	9.8162E-05 (151, 2)	8.8422E-05 (151, 2)
2	6.9867E-05 (151, 2)	9.0091E-05 (196, 2)	1.0385E-04 (196, 2)	1.0273E-04 (196, 2)	9.5247E-05 (196, 2)
3	5.5310E-05 (196, 2)	7.9771E-05 (196, 2)	7.8628E-05 (196, 2)	7.9494E-05 (190, 2)	8.0358E-05 (196, 1)
4	5.8084E-05 (108, 2)	8.5301E-05 (108, 2)	9.6794E-05 (108, 2)	9.7184E-05 (108, 2)	9.1836E-05 (108, 2)
5	5.9600E-05 (195, 2)	8.6417E-05 (195, 2)	9.0973E-05 (195, 2)	8.5960E-05 (195, 2)	7.7741E-05 (195, 2)
6	3.7910E-05 (130, 2)	6.1294E-05 (226, 2)	6.2365E-05 (130, 2)	5.7209E-05 (130, 2)	5.0115E-05 (130, 2)
7	3.1209E-05 (143, 2)	3.4973E-05 (226, 2)	3.4631E-05 (130, 2)	3.4030E-05 (130, 2)	3.1083E-05 (130, 2)
8	3.5509E-05 (122, 2)	4.9109E-05 (122, 2)	4.1476E-05 (122, 2)	3.4631E-05 (130, 2)	3.4527E-05 (130, 2)
9	3.0517E-05 (122, 2)	5.4854E-05 (150, 2)	6.3490E-05 (150, 2)	6.3018E-05 (150, 2)	5.8587E-05 (150, 2)
10	3.0708E-05 (150, 2)	5.2211E-05 (150, 2)	5.5239E-05 (150, 2)	5.0095E-05 (150, 2)	4.2951E-05 (150, 2)
11	2.4206E-05 (146, 2)	3.1144E-05 (103, 2)	3.5317E-05 (225, 2)	3.8461E-05 (225, 2)	3.7270E-05 (225, 2)
12	4.0238E-05 (146, 2)	4.3391E-05 (146, 2)	6.6195E-05 (93, 3)	8.2704E-05 (93, 3)	8.8372E-05 (93, 3)
13	4.3677E-05 (146, 2)	5.4058E-05 (129, 2)	6.1115E-05 (129, 2)	6.1848E-05 (31, 1)	7.4354E-05 (31, 1)
14	7.1126E-05 (136, 2)	1.0938E-04 (136, 2)	1.1851E-04 (136, 2)	1.1294E-04 (136, 2)	1.1471E-04 (93, 2)
15	4.0135E-05 (235, 2)	6.9197E-05 (191, 2)	7.8264E-05 (191, 2)	7.5027E-05 (191, 2)	7.6632E-05 (330, 2)
16	4.5653E-05 (235, 2)	7.9709E-05 (235, 2)	7.8711E-05 (235, 2)	7.3980E-05 (191, 2)	7.0148E-05 (191, 2)
17	4.4011E-05 (223, 2)	6.2718E-05 (235, 2)	6.8210E-05 (235, 2)	6.4253E-05 (235, 2)	6.0169E-05 (185, 2)
18	4.5424E-05 (145, 2)	6.2933E-05 (163, 2)	8.5062E-05 (163, 2)	9.1303E-05 (163, 2)	8.8395E-05 (163, 2)
19	4.2769E-05 (145, 2)	6.2720E-05 (247, 2)	6.5452E-05 (142, 2)	6.5437E-05 (142, 2)	6.7938E-05 (68, 2)
20	4.6728E-05 (147, 2)	7.6268E-05 (147, 2)	7.4191E-05 (147, 2)	7.4044E-05 (264, 2)	7.4196E-05 (264, 2)
21	7.0722E-05 (157, 2)	9.0488E-05 (157, 2)	7.0713E-05 (157, 2)	7.0248E-05 (91, 2)	7.1578E-05 (91, 2)
22	7.1183E-05 (157, 2)	9.4086E-05 (157, 2)	8.9101E-05 (216, 2)	7.9731E-05 (216, 2)	7.3116E-05 (51, 2)
23	6.4099E-05 (168, 2)	9.3099E-05 (185, 2)	1.0616E-04 (185, 2)	1.0148E-04 (185, 2)	9.0523E-05 (185, 2)
24	4.7169E-05 (239, 2)	7.7648E-05 (141, 2)	8.2821E-05 (258, 2)	8.5638E-05 (255, 2)	9.0289E-05 (293, 2)
25	4.0257E-05 (220, 2)	6.5948E-05 (215, 2)	6.7248E-05 (215, 2)	6.9941E-05 (144, 2)	6.6666E-05 (144, 2)
26	3.5453E-05 (154, 2)	5.5207E-05 (215, 2)	5.9949E-05 (92, 2)	6.7806E-05 (92, 2)	6.7677E-05 (92, 2)
27	3.7095E-05 (154, 2)	5.0441E-05 (243, 2)	5.7669E-05 (243, 2)	5.4235E-05 (243, 2)	4.9150E-05 (290, 2)
28	3.4188E-05 (143, 2)	4.5515E-05 (127, 2)	5.2339E-05 (127, 2)	5.1211E-05 (123, 2)	4.7466E-05 (123, 2)
29	2.7280E-05 (127, 2)	5.4640E-05 (123, 2)	6.2558E-05 (123, 2)	6.1415E-05 (123, 2)	5.6408E-05 (123, 2)
30	2.9095E-05 (141, 2)	4.9524E-05 (127, 2)	5.6370E-05 (199, 2)	5.9696E-05 (199, 2)	5.6817E-05 (199, 2)
31	4.5794E-05 (179, 2)	6.7140E-05 (179, 2)	6.6129E-05 (179, 2)	5.8042E-05 (179, 2)	4.9085E-05 (179, 2)
32	3.7901E-05 (179, 2)	5.9059E-05 (189, 2)	6.2364E-05 (189, 2)	6.4156E-05 (113, 2)	6.8570E-05 (230, 2)
33	3.5131E-05 (205, 2)	5.2081E-05 (205, 2)	5.7551E-05 (173, 2)	5.7547E-05 (197, 2)	5.9779E-05 (209, 2)
34	3.8242E-05 (170, 2)	6.2042E-05 (170, 2)	6.4206E-05 (168, 2)	6.5223E-05 (168, 2)	6.1825E-05 (260, 2)
35	4.6967E-05 (125, 2)	7.6448E-05 (172, 2)	1.0101E-04 (117, 2)	1.1120E-04 (117, 2)	1.1033E-04 (117, 2)
36	6.3333E-05 (125, 2)	1.1067E-04 (188, 2)	1.3550E-04 (188, 2)	1.3816E-04 (188, 2)	1.3016E-04 (188, 2)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 8-HOUR CONC= 1.0798E-04 DIRECTION= 14 DISTANCE= 1.1 KM DAY= 93 TIME PERIOD= 2

SECOND HIGHEST 8-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	5.1433E-05 (162, 2)	7.0897E-05 (162, 2)	7.2127E-05 (162, 2)	7.0639E-05 (120, 3)	7.3679E-05 (120, 3)
2	5.6250E-05 (219, 2)	8.6693E-05 (151, 2)	8.4034E-05 (151, 2)	8.0483E-05 (114, 2)	7.6953E-05 (195, 3)
3	4.5577E-05 (151, 2)	6.3255E-05 (190, 2)	7.7550E-05 (190, 2)	7.9431E-05 (196, 1)	7.7041E-05 (324, 2)
4	4.2229E-05 (195, 2)	5.4326E-05 (195, 2)	5.6323E-05 (317, 2)	6.3189E-05 (317, 2)	6.3031E-05 (317, 2)
5	5.5833E-05 (120, 2)	7.4369E-05 (120, 2)	7.5010E-05 (120, 2)	6.8971E-05 (120, 2)	6.1173E-05 (120, 2)
6	3.2790E-05 (226, 2)	5.9850E-05 (130, 2)	5.4122E-05 (226, 2)	4.3699E-05 (234, 2)	4.2147E-05 (234, 2)
7	2.3367E-05 (122, 2)	3.1476E-05 (126, 2)	3.1391E-05 (126, 2)	2.7580E-05 (126, 2)	3.0282E-05 (300, 2)
8	2.8026E-05 (143, 2)	2.7424E-05 (147, 2)	3.1055E-05 (130, 2)	3.3206E-05 (122, 2)	2.6506E-05 (122, 2)
9	2.9838E-05 (150, 2)	4.1737E-05 (122, 2)	3.6417E-05 (274, 2)	4.3973E-05 (274, 2)	4.6285E-05 (274, 2)
10	2.4555E-05 (145, 2)	3.2211E-05 (145, 2)	3.5650E-05 (225, 2)	3.6319E-05 (225, 2)	3.3434E-05 (225, 2)
11	2.2880E-05 (103, 2)	2.8992E-05 (150, 2)	3.3287E-05 (275, 2)	3.7349E-05 (275, 2)	3.7032E-05 (275, 2)
12	3.0274E-05 (132, 2)	4.0730E-05 (132, 2)	5.7095E-05 (130, 3)	6.4190E-05 (130, 3)	6.4401E-05 (130, 3)
13	3.8725E-05 (132, 2)	5.3308E-05 (146, 2)	5.5704E-05 (136, 1)	6.1535E-05 (136, 1)	6.5877E-05 (50, 1)
14	4.5493E-05 (139, 2)	6.2848E-05 (139, 2)	8.7092E-05 (93, 2)	1.0798E-04 (93, 2)	1.0216E-04 (136, 2)
15	3.6974E-05 (191, 2)	6.3506E-05 (235, 2)	6.3438E-05 (330, 2)	7.4627E-05 (330, 2)	6.8643E-05 (329, 3)
16	3.3156E-05 (223, 2)	5.8503E-05 (191, 2)	7.1992E-05 (191, 2)	7.0247E-05 (193, 2)	6.9750E-05 (346, 2)
17	3.3973E-05 (145, 2)	5.9836E-05 (223, 2)	6.2433E-05 (185, 2)	6.4154E-05 (185, 2)	5.8250E-05 (210, 2)
18	3.8189E-05 (223, 2)	6.2222E-05 (105, 2)	7.8091E-05 (105, 2)	8.0812E-05 (105, 2)	7.6883E-05 (105, 2)
19	4.2438E-05 (247, 2)	5.6533E-05 (147, 2)	6.1153E-05 (247, 2)	6.3567E-05 (137, 2)	6.1870E-05 (137, 2)
20	4.6709E-05 (247, 2)	7.0362E-05 (247, 2)	7.2125E-05 (247, 2)	6.7758E-05 (247, 2)	6.3104E-05 (257, 2)
21	4.7283E-05 (147, 2)	6.9531E-05 (148, 2)	6.9275E-05 (148, 2)	6.4976E-05 (271, 2)	6.5315E-05 (263, 1)
22	5.8336E-05 (168, 2)	8.4271E-05 (216, 2)	7.6603E-05 (157, 2)	6.9609E-05 (239, 2)	7.1804E-05 (283, 2)
23	4.8335E-05 (185, 2)	7.9579E-05 (168, 2)	9.2187E-05 (258, 2)	8.9144E-05 (258, 2)	8.1449E-05 (18, 2)
24	4.4090E-05 (141, 2)	7.1704E-05 (220, 2)	7.6617E-05 (255, 2)	8.4617E-05 (293, 2)	8.5276E-05 (255, 2)
25	3.9937E-05 (176, 2)	6.1067E-05 (220, 2)	6.6364E-05 (144, 2)	5.8950E-05 (215, 2)	5.5365E-05 (288, 2)
26	3.4337E-05 (215, 2)	5.3087E-05 (154, 2)	5.4863E-05 (215, 2)	5.8348E-05 (308, 2)	6.2464E-05 (308, 2)
27	3.1007E-05 (143, 2)	4.7446E-05 (154, 2)	4.5873E-05 (215, 2)	4.6272E-05 (290, 2)	4.7391E-05 (243, 2)
28	2.4665E-05 (154, 2)	4.1983E-05 (143, 2)	5.0838E-05 (123, 2)	5.1150E-05 (127, 2)	4.6326E-05 (127, 2)
29	2.6578E-05 (123, 2)	5.3861E-05 (127, 2)	5.5613E-05 (127, 2)	5.1144E-05 (127, 2)	4.5283E-05 (159, 2)
30	2.7736E-05 (115, 2)	4.6219E-05 (123, 2)	5.0331E-05 (138, 2)	4.7853E-05 (138, 2)	4.6432E-05 (203, 2)
31	2.7575E-05 (141, 2)	3.9753E-05 (208, 2)	4.1366E-05 (208, 2)	3.7899E-05 (176, 3)	4.3888E-05 (273, 2)
32	3.7143E-05 (189, 2)	5.7039E-05 (126, 2)	5.8969E-05 (113, 2)	5.8609E-05 (230, 2)	6.3664E-05 (113, 2)
33	3.1076E-05 (170, 2)	4.9670E-05 (173, 2)	5.4092E-05 (197, 2)	5.6712E-05 (173, 2)	5.5959E-05 (197, 2)
34	3.5674E-05 (183, 2)	5.7781E-05 (205, 2)	6.2131E-05 (205, 2)	6.1104E-05 (260, 2)	6.0948E-05 (168, 2)
35	4.1040E-05 (128, 2)	7.6116E-05 (188, 2)	9.7441E-05 (188, 2)	1.0223E-04 (188, 2)	9.8003E-05 (188, 2)
36	5.6785E-05 (188, 2)	9.6590E-05 (125, 2)	1.0105E-04 (125, 2)	9.3568E-05 (125, 2)	8.9512E-05 (114, 3)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

[illegible]XIMUM   3-HOUR CONC= 2.1227E-04 DIRECTION= 5 DISTANCE= .7 KM DAY=195 TIME PERIOD= 4

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	1.9442E-04 (151, 4)	2.1161E-04 (151, 4)	1.8215E-04 (151, 4)	1.4872E-04 (151, 4)	1.3750E-04 (100, 8)
2	1.4611E-04 (151, 4)	1.5529E-04 (151, 4)	1.4206E-04 (114, 5)	1.5314E-04 (114, 5)	1.5268E-04 (114, 5)
3	1.4634E-04 (196, 4)	2.1095E-04 (196, 4)	2.0780E-04 (196, 4)	1.8297E-04 (196, 4)	1.8490E-04 (162, 6)
4	1.3976E-04 (108, 4)	1.6817E-04 (108, 4)	1.5949E-04 (108, 4)	1.4050E-04 (108, 4)	1.2996E-04 (90, 4)
5	1.5516E-04 (195, 4)	2.1227E-04 (195, 4)	2.0676E-04 (195, 4)	1.8167E-04 (195, 4)	1.5455E-04 (195, 4)
6	8.7439E-05 (226, 5)	1.6345E-04 (226, 5)	1.4432E-04 (226, 5)	1.1643E-04 (234, 4)	1.1232E-04 (234, 4)
7	8.3225E-05 (143, 5)	9.3262E-05 (226, 5)	7.6222E-05 (226, 5)	7.1257E-05 (130, 4)	7.2528E-05 (141, 8)
8	9.3933E-05 (122, 4)	1.2913E-04 (122, 4)	1.0860E-04 (122, 4)	8.6773E-05 (122, 4)	6.9237E-05 (122, 4)
9	8.1325E-05 (122, 4)	1.2030E-04 (150, 5)	1.2512E-04 (150, 5)	1.1176E-04 (150, 5)	9.4626E-05 (150, 5)
10	7.9889E-05 (150, 5)	1.3465E-04 (150, 5)	1.4119E-04 (150, 5)	1.2695E-04 (150, 5)	1.0808E-04 (150, 5)
11	6.0419E-05 (146, 4)	7.0802E-05 (116, 4)	8.8766E-05 (275, 4)	9.9598E-05 (275, 4)	9.8753E-05 (275, 4)
12	8.3415E-05 (146, 4)	1.0861E-04 (132, 4)	1.0210E-04 (150, 4)	1.0124E-04 (130, 7)	1.0148E-04 (93, 7)
13	1.0327E-04 (132, 4)	1.3456E-04 (132, 4)	1.4600E-04 (92, 8)	1.5922E-04 (92, 8)	1.5609E-04 (92, 8)
14	1.4145E-04 (136, 4)	1.7208E-04 (136, 4)	1.5668E-04 (136, 4)	1.5388E-04 (136, 3)	1.5041E-04 (136, 3)
15	1.0[illegible]E-04 (235, 5)	1.8091E-04 (191, 4)	2.0275E-04 (191, 4)	1.9309E-04 (191, 4)	1.7271E-04 (191, 4)
16	1.1[illegible] 04 (235, 5)	1.9224E-04 (235, 5)	1.8642E-04 (235, 5)	1.6019E-04 (235, 5)	1.4444E-04 (193, 5)
17	1.1678E-04 (223, 4)	1.5926E-04 (223, 4)	1.1613E-04 (105, 4)	1.1848E-04 (105, 4)	1.1120E-04 (105, 4)
18	1.0179E-04 (223, 4)	1.3981E-04 (105, 4)	1.6427E-04 (105, 4)	1.6000E-04 (105, 4)	1.4673E-04 (263, 5)
19	9.7613E-05 (176, 4)	1.2181E-04 (176, 4)	1.3727E-04 (137, 4)	1.3826E-04 (137, 4)	1.2773E-04 (137, 4)
20	9.8873E-05 (194, 4)	1.3737E-04 (186, 4)	1.4841E-04 (186, 4)	1.5479E-04 (253, 3)	1.6314E-04 (253, 3)
21	1.2637E-04 (157, 4)	1.4312E-04 (138, 4)	1.3039E-04 (103, 4)	1.3452E-04 (255, 4)	1.2894E-04 (191, 5)
22	1.4036E-04 (157, 4)	1.6333E-04 (224, 4)	1.6180E-04 (216, 4)	1.4305E-04 (216, 4)	1.4117E-04 (302, 4)
23	1.4781E-04 (168, 4)	1.6130E-04 (216, 4)	1.7690E-04 (216, 4)	1.6228E-04 (216, 4)	1.5904E-04 (18, 5)
24	1.0958E-04 (239, 4)	1.4594E-04 (141, 4)	1.7347E-04 (232, 5)	1.8989E-04 (232, 5)	1.8548E-04 (232, 5)
25	9.9338E-05 (239, 4)	1.2247E-04 (239, 4)	1.2294E-04 (137, 5)	1.2074E-04 (267, 4)	1.1255E-04 (267, 4)
26	7.8395E-05 (176, 5)	1.0361E-04 (137, 5)	1.2247E-04 (137, 5)	1.2729E-04 (214, 5)	1.2222E-04 (214, 5)
27	8.0[illegible]05 (154, 4)	8.5084E-05 (253, 4)	1.0070E-04 (216, 5)	9.9693E-05 (216, 5)	1.0540E-04 (65, 5)
28	7.[illegible]5 (143, 4)	7.9546E-05 (127, 4)	1.0247E-04 (157, 5)	1.1027E-04 (157, 5)	1.0606E-04 (157, 5)
29	5.[illegible]E-05 (123, 4)	9.6047E-05 (123, 4)	9.3543E-05 (123, 4)	8.9670E-05 (127, 5)	8.5561E-05 (127, 5)
30	7.7587E-05 (141, 4)	1.1005E-04 (138, 5)	1.3070E-04 (138, 5)	1.2580E-04 (138, 5)	1.1425E-04 (179, 6)
31	7.3532E-05 (141, 4)	1.0346E-04 (126, 4)	8.5475E-05 (248, 5)	1.0107E-04 (176, 6)	1.1347E-04 (176, 6)
32	7.7235E-05 (126, 4)	1.5208E-04 (126, 4)	1.4131E-04 (113, 4)	1.4579E-04 (113, 4)	1.3792E-04 (113, 4)
33	9.36[illegible]E-05 (205, 4)	1.3880E-04 (205, 4)	1.3244E-04 (205, 4)	1.3502E-04 (197, 4)	1.2899E-04 (267, 6)
34	9.5588E-05 (170, 4)	1.4110E-04 (205, 4)	1.5213E-04 (198, 4)	1.5725E-04 (198, 4)	1.4864E-04 (198, 4)
35	1.1710E-04 (125, 4)	1.7645E-04 (125, 4)	1.8866E-04 (181, 4)	1.8409E-04 (181, 4)	1.6839E-04 (117, 4)
36	1.1430E-04 (187, 4)	1.7409E-04 (187, 4)	1.8701E-04 (188, 5)	1.9217E-04 (188, 5)	1.8358E-04 (188, 5)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM   3-HOUR CONC= 1.8014E-04 DIRECTION= 3 DISTANCE= 1.1 KM DAY=162 TIME PERIOD= 6

SECOND HIGHEST   3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	1.2379E-04 (162, 4)	1.5006E-04 (162, 4)	1.5009E-04 (209, 4)	1.3703E-04 (100, 8)	1.3194E-04 (120, 7)
2	1.0406E-04 (162, 4)	1.4003E-04 (196, 4)	1.3644E-04 (196, 4)	1.4173E-04 (120, 6)	1.5260E-04 (120, 6)
3	1.0074E-04 (151, 5)	1.3638E-04 (151, 5)	1.5345E-04 (162, 6)	1.8014E-04 (162, 6)	1.6074E-04 (101, 6)
4	1.1149E-04 (195, 4)	1.4232E-04 (195, 4)	1.3572E-04 (169, 5)	1.3076E-04 (169, 5)	1.2091E-04 (108, 4)
5	7.9180E-05 (120, 5)	1.2785E-04 (226, 5)	1.2444E-04 (120, 5)	1.2049E-04 (120, 5)	1.1708E-04 (187, 6)
6	6.0498E-05 (130, 5)	8.3845E-05 (130, 5)	1.0773E-04 (234, 4)	1.1088E-04 (226, 5)	8.8281E-05 (338, 1)
7	5.8001E-05 (122, 4)	7.8479E-05 (143, 5)	7.6022E-05 (121, 5)	6.9710E-05 (237, 5)	6.8757E-05 (207, 6)
8	7.4735E-05 (143, 5)	7.3130E-05 (147, 4)	7.8816E-05 (175, 5)	7.1935E-05 (175, 5)	6.1666E-05 (175, 5)
9	7.2104E-05 (150, 5)	1.1121E-04 (122, 4)	9.3437E-05 (122, 4)	7.8539E-05 (194, 5)	7.5521E-05 (194, 5)
10	6.5463E-05 (145, 4)	8.5883E-05 (145, 4)	7.3667E-05 (150, 3)	7.7431E-05 (150, 3)	7.4451E-05 (185, 5)
11	5.5304E-05 (103, 4)	6.1407E-05 (275, 4)	6.8594E-05 (208, 3)	8.0122E-05 (103, 6)	9.0801E-05 (103, 6)
12	8.0731E-05 (132, 4)	9.8721E-05 (150, 4)	9.4019E-05 (97, 5)	1.0084E-04 (139, 5)	1.0089E-04 (130, 7)
13	8.2939E-05 (150, 4)	1.1023E-04 (150, 4)	1.1248E-04 (249, 5)	1.1700E-04 (93, 1)	1.1816E-04 (93, 1)
14	1.0980E-04 (139, 4)	1.2925E-04 (139, 4)	1.4174E-04 (136, 3)	1.3392E-04 (93, 3)	1.3930E-04 (93, 3)
15	9.7683E-05 (191, 4)	1.6732E-04 (235, 5)	1.4417E-04 (235, 5)	1.1524E-04 (330, 4)	1.1868E-04 (330, 4)
16	8.3961E-05 (223, 4)	1.2794E-04 (191, 4)	1.4187E-04 (191, 4)	1.4204E-04 (193, 5)	1.3302E-04 (235, 5)
17	7.8713E-05 (144, 4)	9.5691E-05 (235, 5)	1.0415E-04 (223, 4)	9.5133E-05 (217, 4)	9.6021E-05 (297, 5)
18	8.7180E-05 (176, 4)	1.3615E-04 (223, 4)	1.3975E-04 (263, 5)	1.5088E-04 (263, 5)	1.4470E-04 (105, 4)
19	7.6941E-05 (248, 4)	1.1129E-04 (161, 4)	1.1604E-04 (109, 5)	1.2316E-04 (109, 5)	1.1738E-04 (109, 5)
20	8.4155E-05 (247, 4)	1.1718E-04 (194, 4)	1.3759E-04 (257, 4)	1.4788E-04 (257, 4)	1.4216E-04 (257, 4)
21	1.0946E-04 (138, 4)	1.4195E-04 (157, 4)	1.2859E-04 (255, 4)	1.3307E-04 (191, 5)	1.2887E-04 (255, 4)
22	1.3830E-04 (168, 4)	1.5974E-04 (157, 4)	1.5552E-04 (224, 4)	1.4109E-04 (224, 4)	1.2935E-04 (51, 5)
23	9.6276E-05 (148, 4)	1.5618E-04 (168, 4)	1.6382E-04 (258, 4)	1.5898E-04 (258, 4)	1.4133E-04 (258, 4)
24	8.8606E-05 (141, 4)	1.3958E-04 (239, 4)	1.3764E-04 (293, 4)	1.4958E-04 (293, 4)	1.4766E-04 (293, 4)
25	8.3068E-05 (176, 5)	1.1532E-04 (249, 4)	1.1876E-04 (267, 4)	1.1632E-04 (137, 5)	1.0758E-04 (300, 4)
26	6.8056E-05 (154, 4)	1.0181E-04 (215, 4)	1.2003E-04 (214, 5)	1.1744E-04 (137, 5)	1.1124E-04 (276, 5)
27	7.7733E-05 (143, 4)	8.3191E-05 (154, 4)	9.0509E-05 (253, 4)	9.4897E-05 (65, 5)	9.0958E-05 (216, 5)
28	6.3306E-05 (154, 4)	7.7888E-05 (123, 4)	8.5794E-05 (123, 4)	7.9404E-05 (123, 4)	8.0635E-05 (345, 4)
29	5.4298E-05 (127, 4)	8.5631E-05 (147, 5)	9.3143E-05 (138, 5)	8.6797E-05 (138, 5)	7.7632E-05 (243, 5)
30	7.0332E-05 (115, 5)	8.9687E-05 (123, 4)	8.5807E-05 (179, 6)	1.0535E-04 (179, 6)	1.1149E-04 (138, 5)
31	6.8836E-05 (179, 4)	8.5024E-05 (123, 4)	8.3088E-05 (271, 5)	9.2742E-05 (237, 6)	9.7939E-05 (237, 6)
32	6.0332E-05 (224, 5)	1.1222E-04 (113, 4)	1.1483E-04 (126, 4)	1.0607E-04 (199, 3)	1.1204E-04 (199, 3)
33	7.9609E-05 (170, 4)	1.2893E-04 (126, 4)	1.3228E-04 (197, 4)	1.1502E-04 (267, 6)	1.2655E-04 (197, 4)
34	9.5131E-05 (183, 4)	1.4071E-04 (170, 4)	1.4609E-04 (205, 4)	1.3141E-04 (205, 4)	1.1262E-04 (205, 4)
35	9.5644E-05 (241, 4)	1.6195E-04 (181, 4)	1.7825E-04 (125, 4)	1.6796E-04 (117, 4)	1.6729E-04 (181, 4)
36	1.1039E-04 (179, 4)	1.5447E-04 (188, 5)	1.7849E-04 (187, 4)	1.6127E-04 (187, 4)	1.6985E-04 (162, 7)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 1-HOUR CONC= 2.8003E-04 DIRECTION= 1 DISTANCE= .7 KM DAY=151 HOUR=11

HIGHEST 1-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	2.4946E-04 (151,10)	2.8003E-04 (151,11)	2.6806E-04 (209,12)	2.4832E-04 (201,11)	2.2545E-04 (197,13)
2	2.5102E-04 (151,12)	2.7748E-04 (195,13)	2.6420E-04 (205,13)	2.3968E-04 (236,13)	2.2086E-04 (233,11)
3	2.5102E-04 (151,13)	2.7479E-04 (151,13)	2.6035E-04 (187,13)	2.3732E-04 (178,12)	2.3129E-04 (178,12)
4	2.2268E-04 (195,11)	2.5753E-04 (195,11)	2.3582E-04 (169,13)	2.1768E-04 (223,15)	2.2057E-04 (223,15)
5	2.1600E-04 (120,13)	2.7180E-04 (195,12)	2.5533E-04 (195,12)	2.1972E-04 (195,10)	2.0472E-04 (166,13)
6	1.8040E-04 (130,13)	2.5232E-04 (226,13)	2.4229E-04 (130,12)	2.2977E-04 (130,12)	2.0510E-04 (130,12)
7	2.4967E-04 (143,13)	2.3544E-04 (143,13)	2.2806E-04 (121,15)	2.0913E-04 (237,13)	2.0625E-04 (207,16)
8	2.2420E-04 (143,13)	2.2613E-04 (122,11)	2.3645E-04 (175,15)	2.1580E-04 (175,15)	1.8500E-04 (175,15)
9	1.9520E-04 (104,12)	2.4449E-04 (147,10)	2.3221E-04 (144,13)	2.3562E-04 (194,13)	2.2656E-04 (194,13)
10	1.9639E-04 (145,11)	2.5765E-04 (145,11)	2.2100E-04 (150, 8)	2.3229E-04 (150, 8)	2.2335E-04 (185,14)
11	1.8126E-04 (146,10)	2.0930E-04 (116,11)	2.0578E-04 (208, 8)	2.0611E-04 (262,13)	2.0050E-04 (262,13)
12	2.5025E-04 (146,10)	2.4038E-04 (150,11)	2.5817E-04 (150,11)	2.3952E-04 (150,11)	2.1081E-04 (150,11)
13	2.4336E-04 (223,13)	2.7279E-04 (150,10)	2.5543E-04 (150,10)	2.2009E-04 (134,13)	2.2229E-04 (257,15)
14	2.3548E-04 (136,10)	2.5674E-04 (136,10)	2.4160E-04 (136,11)	2.2654E-04 (136,13)	2.0552E-04 (136,13)
15	1.8483E-04 (235,13)	2.5109E-04 (235,13)	2.3682E-04 (191,12)	2.2637E-04 (191,12)	2.2249E-04 (210,15)
16	2.3612E-04 (144,11)	2.2911E-04 (175,11)	2.4236E-04 (134,12)	2.2881E-04 (134,12)	2.2657E-04 (193,15)
17	2.3612E-04 (144,11)	2.4895E-04 (223,11)	2.2981E-04 (210,14)	2.3618E-04 (210,16)	2.3593E-04 (210,16)
18	2.3882E-04 (176,10)	2.5346E-04 (147,12)	2.3517E-04 (217,12)	2.3100E-04 (263,13)	2.2413E-04 (164,15)
19	2.3071E-04 (248,12)	2.5328E-04 (161,10)	2.3309E-04 (217,13)	2.3132E-04 (239,16)	2.3214E-04 (239,16)
20	2.5092E-04 (247,11)	2.5396E-04 (210,10)	2.4150E-04 (186,12)	2.4164E-04 (257,12)	2.3454E-04 (257,12)
21	2.6409E-04 (194,11)	2.4762E-04 (157,13)	2.4031E-04 (146,11)	2.1869E-04 (220,15)	2.1918E-04 (255,11)
22	2.4190E-04 (168,10)	2.5546E-04 (184,11)	2.4052E-04 (176,14)	2.4033E-04 (167,10)	2.2748E-04 (157,17)
23	2.2924E-04 (168,10)	2.5233E-04 (168,11)	2.4031E-04 (161,12)	2.3625E-04 (203,13)	2.3048E-04 (203,13)
24	2.4492E-04 (158,11)	2.5823E-04 (186,11)	2.4150E-04 (186,11)	2.3562E-04 (180, 9)	2.2505E-04 (180, 9)
25	2.4817E-04 (176,13)	2.5831E-04 (220,13)	2.4297E-04 (215,13)	2.3621E-04 (233,10)	2.2097E-04 (233,10)
26	2.3516E-04 (176,13)	2.3332E-04 (170,12)	2.3817E-04 (218,11)	2.3287E-04 (193,17)	2.3249E-04 (193,17)
27	2.3461E-04 (154,11)	2.4733E-04 (170,12)	2.3990E-04 (243,14)	2.3621E-04 (267,12)	2.2097E-04 (267,12)
28	2.3312E-04 (143,11)	2.2262E-04 (143,11)	2.2626E-04 (193,12)	2.0913E-04 (199,10)	2.0045E-04 (160,17)
29	1.4358E-04 (141,12)	2.5689E-04 (147,13)	2.3545E-04 (194,10)	2.1978E-04 (243,13)	2.1981E-04 (243,13)
30	2.3276E-04 (141,12)	2.4119E-04 (127,11)	2.5637E-04 (250,12)	2.4257E-04 (216,13)	2.3435E-04 (216,13)
31	2.2060E-04 (141,12)	2.4707E-04 (179,12)	2.4927E-04 (271,15)	2.4287E-04 (201,10)	2.2484E-04 (201,10)
32	1.7347E-04 (158,12)	2.4097E-04 (206,11)	2.4999E-04 (189,13)	2.3544E-04 (189,13)	2.2397E-04 (199, 9)
33	2.2807E-04 (169,10)	2.6939E-04 (169,10)	2.6727E-04 (171,12)	2.4985E-04 (201,12)	2.3065E-04 (201,12)
34	2.3729E-04 (236,11)	2.3933E-04 (205,12)	2.5733E-04 (168,13)	2.4864E-04 (168,13)	2.2791E-04 (198,11)
35	2.2488E-04 (236,11)	2.7201E-04 (169,11)	2.6422E-04 (207,11)	2.4383E-04 (167,13)	2.3617E-04 (167,13)
36	2.4346E-04 (184,12)	2.7868E-04 (188,13)	2.6850E-04 (188,13)	2.5065E-04 (215,14)	2.3031E-04 (215,14)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 1-HOUR CONC= 2.7652E-04 DIRECTION= 36 DISTANCE= .7 KM DAY=246 HOUR=11

SECOND HIGHEST 1-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.5 KM	.7 KM	.9 KM	1.1 KM	1.3 KM
1	2.4129E-04 (151,11)	2.7092E-04 (196,13)	2.6349E-04 (196,13)	2.4479E-04 (199,12)	2.2523E-04 (201,11)
2	2.4650E-04 (219,11)	2.7479E-04 (151,12)	2.5162E-04 (236,13)	2.3340E-04 (170,14)	2.2003E-04 (170,14)
3	2.3729E-04 (238,11)	2.6452E-04 (187,13)	2.5824E-04 (162,13)	2.3123E-04 (162,13)	2.1823E-04 (195,14)
4	2.0254E-04 (108,11)	2.5063E-04 (169,13)	2.2833E-04 (195,11)	2.0241E-04 (169,13)	1.9764E-04 (63,16)
5	2.0916E-04 (195,12)	2.6400E-04 (190,13)	2.4612E-04 (190,13)	2.1914E-04 (195,12)	2.0045E-04 (160,16)
6	1.6235E-04 (143,13)	2.4538E-04 (130,13)	2.3947E-04 (145,15)	2.1769E-04 (145,15)	1.8825E-04 (234,12)
7	1.5469E-04 (121,15)	2.2949E-04 (121,15)	2.2734E-04 (142,14)	2.0867E-04 (142,14)	1.8757E-04 (237,13)
8	2.1104E-04 (122,11)	2.1939E-04 (147,10)	2.0359E-04 (271,14)	1.8833E-04 (271,14)	1.8034E-04 (153,16)
9	1.8151E-04 (238,12)	2.3891E-04 (238,12)	2.2352E-04 (234,14)	2.1172E-04 (144,13)	2.0981E-04 (255,16)
10	1.8151E-04 (238,12)	2.3891E-04 (238,12)	2.1807E-04 (225,11)	2.1418E-04 (185,14)	2.2176E-04 (150, 8)
11	1.6591E-04 (103,12)	1.8164E-04 (145,11)	1.9839E-04 (121,14)	2.0537E-04 (208, 8)	1.8622E-04 (208, 8)
12	2.1856E-04 (223,13)	2.3978E-04 (146,10)	2.0971E-04 (276,12)	2.1055E-04 (139,15)	2.0767E-04 (139,15)
13	2.1665E-04 (132,12)	2.3803E-04 (146,13)	2.3781E-04 (146,13)	2.1894E-04 (150,10)	2.1482E-04 (148,17)
14	2.2894E-04 (139,10)	2.5196E-04 (139,10)	2.3287E-04 (136,13)	2.1044E-04 (136,11)	2.0138E-04 (190,23)
15	1.7038E-04 (158,10)	2.3002E-04 (139,12)	2.2272E-04 (139,12)	2.2322E-04 (210,15)	2.0298E-04 (191,12)
16	1.5453E-04 (223,11)	2.2348E-04 (144,11)	2.3209E-04 (175,11)	2.2238E-04 (129,11)	2.1779E-04 (140,13)
17	1.8766E-04 (145,13)	2.3591E-04 (145,13)	2.2038E-04 (193,11)	2.3618E-04 (210,14)	2.2203E-04 (210,14)
18	2.1471E-04 (115,12)	2.5011E-04 (145,13)	2.2936E-04 (218,14)	2.2955E-04 (163,11)	2.2164E-04 (263,13)
19	2.2633E-04 (176,10)	2.5324E-04 (145,10)	2.3221E-04 (242,14)	2.2468E-04 (192,10)	2.2086E-04 (192,10)
20	2.4346E-04 (248,12)	2.4050E-04 (247,11)	2.3645E-04 (217,11)	2.4039E-04 (210,13)	2.3272E-04 (210,13)
21	2.5128E-04 (147,11)	2.4663E-04 (148,10)	2.3524E-04 (157,13)	2.1179E-04 (284,15)	2.1809E-04 (192,17)
22	2.4180E-04 (157,11)	2.4682E-04 (164,13)	2.3864E-04 (216,12)	2.2540E-04 (157,17)	2.2305E-04 (167,10)
23	2.1996E-04 (158,11)	2.4322E-04 (214,13)	2.3617E-04 (148,11)	2.3504E-04 (185,11)	2.2870E-04 (185,11)
24	2.3612E-04 (239,11)	2.4189E-04 (141,10)	2.3228E-04 (238,14)	2.3268E-04 (238,14)	2.2009E-04 (232,13)
25	2.3612E-04 (239,11)	2.5492E-04 (249,12)	2.4120E-04 (186,13)	2.2111E-04 (148,13)	2.1627E-04 (299,12)
26	1.8120E-04 (170,12)	2.2598E-04 (215,12)	2.2831E-04 (253,12)	2.1821E-04 (214,14)	2.1295E-04 (242,10)
27	2.3312E-04 (143,11)	2.3510E-04 (154,11)	2.3170E-04 (267,12)	2.2254E-04 (216,15)	2.1580E-04 (174,10)
28	1.8934E-04 (154,11)	2.1873E-04 (220,12)	2.2626E-04 (218, 9)	2.0568E-04 (193,12)	1.8809E-04 (66,13)
29	1.4019E-04 (127,11)	2.1533E-04 (194,10)	2.2170E-04 (123,12)	2.1518E-04 (194,10)	2.0484E-04 (240, 9)
30	2.1100E-04 (115,13)	2.3792E-04 (250,12)	2.3453E-04 (180,12)	2.3947E-04 (199,11)	2.3291E-04 (199,11)
31	2.0561E-04 (179,12)	2.4387E-04 (224,13)	2.4200E-04 (201,10)	2.3352E-04 (271,15)	2.1655E-04 (171,10)
32	1.7341E-04 (224,13)	2.3704E-04 (126,11)	2.3977E-04 (113,12)	2.3242E-04 (113,12)	2.1039E-04 (113,12)
33	1.8980E-04 (170,11)	2.6693E-04 (171,12)	2.6422E-04 (173,12)	2.4239E-04 (259,15)	2.2870E-04 (181,14)
34	2.3071E-04 (153,12)	2.3440E-04 (153,12)	2.3864E-04 (205,12)	2.3398E-04 (198,11)	2.2457E-04 (168,13)
35	2.1677E-04 (123,13)	2.5471E-04 (207,11)	2.6420E-04 (169,11)	2.4239E-04 (241,11)	2.3191E-04 (188,10)
36	2.3163E-04 (179,11)	2.7652E-04 (246,11)	2.6706E-04 (149,13)	2.4977E-04 (188,12)	2.2970E-04 (188,12)

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM DAILY CONCENTRATIONS

DAY	24-HOUR CONCENTRATION	DIRECTION	DISTANCE
196	7.1372E-05	2	1.30
330	6.7788E-05	15	1.30
136	6.7613E-05	14	1.10
188	6.3618E-05	36	1.30
93	6.1298E-05	14	1.30
181	5.9466E-05	35	1.30
197	5.8372E-05	36	1.30
125	5.4974E-05	36	1.10
152	5.4594E-05	36	1.30
151	5.2890E-05	1	1.10
117	5.1180E-05	35	1.30
114	4.8113E-05	36	1.30
50	4.7769E-05	14	1.30
172	4.6549E-05	35	1.30
170	4.6522E-05	36	1.30
322	4.5533E-05	15	1.30
120	4.4438E-05	2	1.30
329	4.4327E-05	15	1.30
162	4.2937E-05	3	1.10
86	4.1879E-05	1	1.30
128	4.1574E-05	35	1.10
171	4.1558E-05	35	1.30
205	4.1112E-05	35	1.30
100	4.0990E-05	1	1.30
316	4.0975E-05	1	1.30
76	4.0278E-05	36	1.30
189	3.8401E-05	34	1.30
169	3.8021E-05	34	1.30
101	3.7966E-05	1	1.30
195	3.7945E-05	2	1.10
241	3.7751E-05	1	1.30
108	3.7310E-05	4	1.10
157	3.6950E-05	22	.70
187	3.6931E-05	35	1.10
198	3.6657E-05	34	1.30
73	3.6484E-05	14	1.30
183	3.6414E-05	2	1.10
173	3.6391E-05	35	1.30
185	3.5869E-05	23	.90
167	3.5668E-05	35	1.30
44	3.4852E-05	14	1.30
297	3.4362E-05	15	1.30
148	3.3169E-05	22	.90
207	3.2817E-05	35	1.30
58	3.2762E-05	35	1.30
116	3.2552E-05	36	1.30
317	3.2258E-05	3	1.30
70	3.1342E-05	34	1.30
149	3.1157E-05	36	1.10
208	3.1073E-05	36	1.30

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM 8-HOURLY CONCENTRATIONS

DAY	8-HOUR CONCENTRATION	DIRECTION	DISTANCE	TIME PERIOD
188	1.3816E-04	36	1.10	2
188	1.3550E-04	36	.90	2
188	1.3016E-04	36	1.30	2
136	1.1851E-04	14	.90	2
93	1.1471E-04	14	1.30	2
136	1.1294E-04	14	1.10	2
117	1.1120E-04	35	1.10	2
188	1.1067E-04	36	.70	2
117	1.1033E-04	35	1.30	2
136	1.0938E-04	14	.70	2
93	1.0798E-04	14	1.10	2
185	1.0616E-04	23	.90	2
151	1.0500E-04	1	.90	2
196	1.0385E-04	2	.90	2
196	1.0273E-04	2	1.10	2
151	1.0272E-04	1	.70	2
188	1.0223E-04	35	1.10	2
136	1.0216E-04	14	1.30	2
185	1.0148E-04	23	1.10	2
125	1.0105E-04	36	.90	2
117	1.0101E-04	35	.90	2
151	9.8162E-05	1	1.10	2
188	9.8003E-05	35	1.30	2
188	9.7441E-05	35	.90	2
108	9.7184E-05	4	1.10	2
181	9.6811E-05	35	1.10	2
108	9.6794E-05	4	.90	2
172	9.6617E-05	35	1.10	2
125	9.6590E-05	36	.70	2
196	9.5247E-05	2	1.30	2
172	9.4977E-05	35	.90	2
157	9.4086E-05	22	.70	2
181	9.3712E-05	35	1.30	2
125	9.3568E-05	36	1.10	2
185	9.3099E-05	23	.70	2
258	9.2187E-05	23	.90	2
108	9.1836E-05	4	1.30	2
181	9.1776E-05	35	.90	2
163	9.1303E-05	18	1.10	2
195	9.0973E-05	5	.90	2
185	9.0523E-05	23	1.30	2
157	9.0488E-05	21	.70	2
293	9.0289E-05	24	1.30	2
172	9.0252E-05	35	1.30	2
50	9.0197E-05	14	1.30	2
196	9.0091E-05	2	.70	2
114	8.9512E-05	36	1.30	3
258	8.9144E-05	23	1.10	2
216	8.9101E-05	22	.90	2
151	8.8422E-05	1	1.30	2

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM 3-HOURLY CONCENTRATIONS

DAY	3-HOUR CONCENTRATION	DIRECTION	DISTANCE	TIME PERIOD
195	2.1227E-04	5	.70	4
151	2.1161E-04	1	.70	4
196	2.1095E-04	3	.70	4
196	2.0780E-04	3	.90	4
195	2.0676E-04	5	.90	4
191	2.0275E-04	15	.90	4
151	1.9442E-04	1	.50	4
191	1.9309E-04	15	1.10	4
235	1.9224E-04	16	.70	5
188	1.9217E-04	36	1.10	5
232	1.8989E-04	24	1.10	5
181	1.8866E-04	35	.90	4
188	1.8701E-04	36	.90	5
235	1.8642E-04	16	.90	5
232	1.8548E-04	24	1.30	5
162	1.8490E-04	3	1.30	6
181	1.8409E-04	35	1.10	4
188	1.8358E-04	36	1.30	5
196	1.8297E-04	3	1.10	4
151	1.8215E-04	1	.90	4
195	1.8167E-04	5	1.10	4
191	1.8091E-04	15	.70	4
162	1.8014E-04	3	1.10	6
187	1.7849E-04	36	.90	4
125	1.7825E-04	35	.90	4
216	1.7690E-04	23	.90	4
125	1.7645E-04	35	.70	4
187	1.7409E-04	36	.70	4
232	1.7347E-04	24	.90	5
191	1.7271E-04	15	1.30	4
136	1.7208E-04	14	.70	4
162	1.6985E-04	36	1.30	7
117	1.6839E-04	35	1.30	4
108	1.6817E-04	4	.70	4
117	1.6796E-04	35	1.10	4
235	1.6732E-04	15	.70	5
181	1.6729E-04	35	1.30	4
105	1.6427E-04	18	.90	4
241	1.6382E-04	35	.90	4
258	1.6382E-04	23	.90	4
226	1.6345E-04	6	.70	5
224	1.6333E-04	22	.70	4
253	1.6314E-04	20	1.30	3
216	1.6228E-04	23	1.10	4
181	1.6195E-04	35	.70	4
216	1.6180E-04	22	.90	4
216	1.6130E-04	23	.70	4
187	1.6127E-04	36	1.10	4
188	1.6108E-04	35	1.10	4
101	1.6074E-04	3	1.30	6

TABLE 8.5.2 CRSTER EXAMPLE -- OUTPUT (RINGS 1-5) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM HOURLY CONCENTRATIONS

DAY	1-HOUR CONCENTRATION	DIRECTION	DISTANCE	HOUR
151	2.8003E-04	1	.70	11
188	2.7868E-04	36	.70	13
195	2.7748E-04	2	.70	13
246	2.7652E-04	36	.70	11
149	2.7644E-04	36	.70	13
151	2.7479E-04	2	.70	12
151	2.7479E-04	3	.70	13
150	2.7279E-04	13	.70	10
169	2.7270E-04	2	.70	12
169	2.7201E-04	35	.70	11
205	2.7201E-04	2	.70	13
195	2.7180E-04	5	.70	12
196	2.7092E-04	1	.70	13
169	2.6939E-04	33	.70	10
188	2.6850E-04	36	.90	13
209	2.6809E-04	1	.70	12
209	2.6806E-04	1	.90	12
171	2.6727E-04	33	.90	12
149	2.6706E-04	36	.90	13
171	2.6693E-04	33	.70	12
187	2.6452E-04	3	.70	13
173	2.6422E-04	33	.90	12
207	2.6422E-04	35	.90	11
169	2.6420E-04	35	.90	11
205	2.6420E-04	2	.90	13
194	2.6409E-04	21	.50	11
190	2.6400E-04	5	.70	13
201	2.6357E-04	1	.70	13
196	2.6349E-04	1	.90	13
246	2.6227E-04	36	.90	11
187	2.6035E-04	3	.90	13
151	2.6007E-04	1	.70	10
162	2.5997E-04	36	.70	10
198	2.5892E-04	35	.90	10
220	2.5831E-04	25	.70	13
162	2.5824E-04	3	.90	13
186	2.5823E-04	24	.70	11
150	2.5817E-04	12	.90	11
236	2.5784E-04	3	.70	12
145	2.5765E-04	10	.70	11
195	2.5753E-04	4	.70	11
168	2.5733E-04	34	.90	13
178	2.5728E-04	1	.70	13
196	2.5728E-04	3	.70	11
120	2.5709E-04	5	.70	13
147	2.5689E-04	29	.70	13
186	2.5685E-04	36	.90	14
136	2.5674E-04	14	.70	10
250	2.5637E-04	30	.90	12
259	2.5555E-04	33	.90	15

TABLE 8.5.3 CRSTER EXAMPLE -- INPUT DATA (RINGS 6-10)

```
CRSTER CLASS EXAMPLE
THIS IS A SINGLE SOURCE (CRSTER) MODEL EXAMPLE RUN.

    123169   83 3160   83  1.7  2.2  2.9  3.8  5.0  14400. 1
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1
TEST STACK
      100.                35.0       2.4      11.7     432.0
```

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (Partial Printout)

```
                         CRSTER (VERSION 86211)
                         AN AIR QUALITY DISPERSION MODEL IN
                         SECTION 1. GUIDELINE MODELS (1978)
                         IN UNAMAP (VERSION 6) DEC 86

PLANT NAME: CRSTER CLASS EXAMPLE      EMISSION UNITS: GM/SEC    AIR QUALITY UNITS: GM/M**3 12/80
 THIS IS A SINGLE SOURCE (CRSTER) MODEL EXAMPLE RUN.

              MET FILE     REQUESTED
             STN NO. YR   STN NO. YR
  SURFACE     23169  83    23169  83
  UPPER AIR    3160  83     3160  83
 POLLUTANT: SO2
 PLANT LOCATION: RURAL
 ANEMOMETER HEIGHT IS 10.0 METERS
 HALF LIFE IS         0. SEC
 STACK DOWNWASH ACCOUNTED FOR
 MOMENTUM PLUME RISE ACCOUNTED FOR
 BUOYANCY-INDUCED DISPERSION ACCOUNTED FOR
 DEFAULT OPTION EXERCISED
 WIND PROFILE EXPONENTS ARE:    .070,   .070,   .100,   .150,   .350,   .550,
 NO TAPE OUTPUT
 MET DATA WILL NOT BE PRINTED

 DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 0


  * * * * * * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * * * * * * *

        ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS

        MARKED BY "1" IN THE ABOVE TABLE
```

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (cont.)

RING DISTANCES(KM)= 1.70 2.20 2.90 3.80 5.00

PLANT ELEVATION (FEET ABOVE SEA LEVEL)-- .0

PLANT ELEVATION (METERS ABOVE SEA LEVEL)-- .0

	RECEPTOR ELEVATIONS (FEET ABOVE SEA LEVEL)					RECEPTOR ELEVATIONS (METERS ABOVE SEA LEVEL)				
DIRECTION	RING#1	RING#2	RING#3	RING#4	RING#5	RING#1	RING#2	RING#3	RING#4	RING#5
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
32	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
33	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
34	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
35	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
36	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (cont.)

STACK # 1--TEST STACK

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	100.0000	35.00	2.40	11.70	432.00	52.93

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

		MAX HOURLY				MAX 24-HOUR		
DAY	RATIO	CONCENTRATION	DIRECTION	DISTANCE(KM)	HOUR	CONCENTRATION	DIRECTION	DISTANCE(KM)
1	9.848	1.377307E-04	25	2.20	10	1.398609E-05	34	2.90
2	19.868	1.556889E-04	19	2.20	10	7.836330E-06	2	2.90
3	16.588	1.505469E-04	25	1.70	12	9.075769E-06	23	2.20
4	21.647	2.037995E-04	18	2.90	11	9.414885E-06	24	2.20
5	17.107	2.075771E-04	25	2.20	11	1.213417E-05	23	2.20
6	19.569	1.463900E-04	25	2.20	13	7.480728E-06	26	2.20
7	14.034	1.543902E-04	5	1.70	11	1.100151E-05	28	1.70
8	17.372	1.899515E-04	10	2.90	9	1.093409E-05	26	1.70
9	7.040	1.864776E-04	10	1.70	9	2.649016E-05	23	1.70
10	16.787	2.340654E-04	35	1.70	10	1.394285E-05	35	1.70
11	22.294	1.644522E-04	2	1.70	12	7.376362E-06	2	2.20
12	11.835	1.687975E-04	17	1.70	14	1.426308E-05	3	2.90
13	12.847	2.321497E-04	34	2.20	9	1.807045E-05	35	1.70
14	12.664	1.826393E-04	20	1.70	14	1.442155E-05	18	2.20
15	6.603	1.529772E-04	19	3.80	9	2.316716E-05	5	3.80
16	15.588	1.221388E-04	2	5.00	20	7.835454E-06	36	5.00
17	11.573	1.671682E-04	21	1.70	14	1.444419E-05	6	2.90
18	6.222	1.791156E-04	23	1.70	15	2.878657E-05	23	1.70
19	13.169	1.796096E-04	13	1.70	14	1.363927E-05	4	2.20
20	15.663	1.687000E-04	32	1.70	9	1.077070E-05	9	2.20
21	14.838	1.605254E-04	26	1.70	15	1.081823E-05	36	5.00
22	12.620	1.216321E-04	19	5.00	3	9.637876E-06	10	5.00
23	14.425	1.135079E-04	36	5.00	3	7.868946E-06	2	5.00
24	18.177	1.374544E-04	24	3.80	11	7.562159E-06	19	2.90
25	9.928	1.282385E-04	30	1.70	14	1.291655E-05	5	5.00
26	13.220	1.381389E-04	26	2.20	14	1.044943E-05	7	3.80
27	10.152	1.316718E-04	33	5.00	22	1.297010E-05	11	3.80
28	11.278	1.656383E-04	25	1.70	13	1.468706E-05	24	2.20
29	11.978	1.692747E-04	2	1.70	14	1.413174E-05	4	1.70
30	9.329	1.396785E-04	12	2.20	22	1.497271E-05	14	2.90
31	3.763	1.449259E-04	14	1.70	11	3.851182E-05	13	2.20
32	11.314	1.297753E-04	27	1.70	12	1.147014E-05	35	3.80
33	14.832	1.733351E-04	19	1.70	11	1.168696E-05	19	1.70
34	15.671	1.045041E-04	7	2.90	1	6.668819E-06	2	5.00
35	12.166	1.502142E-04	34	1.70	13	1.234671E-05	24	1.70
36	9.706	1.248599E-04	3	1.70	11	1.286436E-05	9	5.00
37	6.693	1.314841E-04	26	5.00	3	1.964612E-05	34	2.90
38	10.255	1.045820E-04	20	5.00	19	1.019835E-05	20	5.00
39	5.134	1.604429E-04	36	1.70	7	3.125280E-05	36	1.70
40	9.040	1.595517E-04	24	1.70	15	1.765040E-05	24	1.70
41	10.920	1.739938E-04	29	1.70	14	1.593342E-05	5	5.00
42	11.599	1.559804E-04	1	1.70	9	1.344761E-05	22	1.70
43	11.181	1.627678E-04	27	1.70	14	1.455786E-05	6	5.00
44	4.991	1.762804E-04	14	1.70	17	3.532305E-05	14	1.70
45	6.309	1.687110E-04	14	1.70	13	2.674084E-05	14	1.70
46	11.762	1.661939E-04	24	1.70	14	1.412959E-05	24	1.70
47	11.592	1.389890E-04	19	1.70	13	1.199018E-05	36	5.00
48	12.715	1.967368E-04	12	3.80	8	1.547297E-05	5	5.00
49	10.104	1.808913E-04	22	1.70	11	1.790314E-05	3	1.70

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= 7.4273E-06 DIRECTION= 36 DISTANCE= 1.7 KM # OF CALMS FOR THE PERIOD: 32

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR \ RANGE	1.7 KM	2.2 KM	2.9 KM	3.8 KM	5.0 KM
1	6.28200E-06 C	5.90766E-06 C	5.13852E-06 C	4.23154E-06 C	3.32638E-06 C
2	5.67209E-06 C	5.43156E-06 C	4.85677E-06 C	4.14107E-06 C	3.37768E-06 C
3	4.48475E-06 C	4.29455E-06 C	3.88052E-06 C	3.36770E-06 C	2.80064E-06 C
4	3.55379E-06 C	3.58706E-06 C	3.42647E-06 C	3.12262E-06 C	2.70108E-06 C
5	3.13024E-06 C	3.41811E-06 C	3.55058E-06 C	3.49487E-06 C	3.23670E-06 C
6	2.64189E-06 C	2.96774E-06 C	3.14548E-06 C	3.12522E-06 C	2.89768E-06 C
7	1.87826E-06 C	2.16711E-06 C	2.35973E-06 C	2.39536E-06 C	2.25446E-06 C
8	1.40122E-06 C	1.62060E-06 C	1.79927E-06 C	1.87377E-06 C	1.81341E-06 C
9	1.28828E-06 C	1.42908E-06 C	1.53596E-06 C	1.56970E-06 C	1.50415E-06 C
10	1.24640E-06 C	1.25430E-06 C	1.20700E-06 C	1.11562E-06 C	9.86238E-07 C
11	1.58661E-06 C	1.57541E-06 C	1.48288E-06 C	1.34051E-06 C	1.16021E-06 C
12	2.29789E-06 C	2.16346E-06 C	1.91310E-06 C	1.62436E-06 C	1.33589E-06 C
13	3.14033E-06 C	2.89425E-06 C	2.49308E-06 C	2.05808E-06 C	1.63719E-06 C
14	3.74305E-06 C	3.40631E-06 C	2.86511E-06 C	2.28712E-06 C	1.74968E-06 C
15	3.32995E-06 C	3.01235E-06 C	2.52139E-06 C	2.01270E-06 C	1.54883E-06 C
16	2.75254E-06 C	2.46061E-06 C	2.05008E-06 C	1.64107E-06 C	1.26907E-06 C
17	2.74101E-06 C	2.41410E-06 C	1.97410E-06 C	1.54344E-06 C	1.15978E-06 C
18	3.17118E-06 C	2.79293E-06 C	2.29428E-06 C	1.81248E-06 C	1.38348E-06 C
19	3.07122E-06 C	2.68742E-06 C	2.18940E-06 C	1.71026E-06 C	1.29194E-06 C
20	3.04010E-06 C	2.56178E-06 C	2.00322E-06 C	1.50734E-06 C	1.09792E-06 C
21	3.55419E-06 C	2.99764E-06 C	2.36422E-06 C	1.81040E-06 C	1.35360E-06 C
22	4.15482E-06 C	3.53762E-06 C	2.81392E-06 C	2.16680E-06 C	1.62622E-06 C
23	4.52554E-06 C	3.84006E-06 C	3.04182E-06 C	2.32878E-06 C	1.73466E-06 C
24	4.46539E-06 C	3.82194E-06 C	3.06288E-06 C	2.38367E-06 C	1.81190E-06 C
25	3.26313E-06 C	2.81290E-06 C	2.27154E-06 C	1.77484E-06 C	1.34906E-06 C
26	2.24750E-06 C	1.93652E-06 C	1.55071E-06 C	1.19341E-06 C	8.87998E-07 C
27	1.86551E-06 C	1.62489E-06 C	1.31917E-06 C	1.03296E-06 C	7.84329E-07 C
28	1.52648E-06 C	1.33536E-06 C	1.08603E-06 C	8.48021E-07 C	6.40225E-07 C
29	1.43843E-06 C	1.26973E-06 C	1.05018E-06 C	8.44909E-07 C	6.65309E-07 C
30	1.66281E-06 C	1.48455E-06 C	1.23430E-06 C	9.87319E-07 C	7.65255E-07 C
31	2.05316E-06 C	1.89483E-06 C	1.62260E-06 C	1.32315E-06 C	1.03689E-06 C
32	2.42316E-06 C	2.25094E-06 C	1.94189E-06 C	1.59333E-06 C	1.25735E-06 C
33	3.20822E-06 C	3.02255E-06 C	2.64703E-06 C	2.20102E-06 C	1.75130E-06 C
34	4.16153E-06 C	4.02240E-06 C	3.61995E-06 C	3.08086E-06 C	2.48896E-06 C
35	6.29504E-06 C	6.10543E-06 C	5.50595E-06 C	4.69184E-06 C	3.80073E-06 C
36	7.42727E-06 C	7.18939E-06 C	6.46886E-06 C	5.51330E-06 C	4.47705E-06 C

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 6.8363E-05 DIRECTION= 15 DISTANCE= 1.7 KM DAY=330

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	1.7 KM	2.2 KM	2.9 KM	3.8 KM	5.0 KM
1	4.5186E-05 (86)	4.3706E-05 (241)	3.9701E-05 (241)	3.3259E-05 (241)	2.6111E-05 (241)
2	6.6017E-05 (196)	5.6480E-05 (196)	4.4560E-05 (196)	3.3526E-05 (196)	2.4208E-05 (196)
3	5.1778E-05 (196)	4.2464E-05 (196)	3.2259E-05 (196)	2.3532E-05 (196)	1.7523E-05 (204)
4	3.1953E-05 (195)	2.7433E-05 (195)	2.2124E-05 (195)	1.7477E-05 (77)	1.6347E-05 (245)
5	3.0449E-05 (195)	2.4873E-05 (141)	2.1496E-05 (15)	2.3167E-05 (15)	2.2519E-05 (15)
6	1.7280E-05 (234)	1.7139E-05 (338)	1.6420E-05 (338)	1.6066E-05 (292)	1.5157E-05 (292)
7	1.9017E-05 (225)	1.9255E-05 (225)	2.1178E-05 (63) C	2.1603E-05 (63) C	2.0282E-05 (63) C
8	1.0638E-05 (281)	1.2900E-05 (281)	1.4394E-05 (281)	1.5090E-05 (281)	1.4500E-05 (281)
9	1.8937E-05 (274)	1.6824E-05 (274)	1.3996E-05 (334)	1.5435E-05 (334)	1.5177E-05 (334)
10	1.7705E-05 (150)	1.2378E-05 (150)	1.0301E-05 (357)	1.1307E-05 (357)	1.1100E-05 (357)
11	1.3988E-05 (262)	1.1373E-05 (192)	1.3096E-05 (347)	1.5389E-05 (357)	1.5850E-05 (357)
12	2.9491E-05 (93)	2.6298E-05 (93)	2.1327E-05 (93)	1.6315E-05 (93)	1.1906E-05 (93)
13	3.6094E-05 (31)	3.8512E-05 (31)	3.7064E-05 (31)	3.2850E-05 (31)	2.7186E-05 (31)
14	5.9814E-05 (93)	5.2617E-05 (93)	4.2088E-05 (93)	3.2754E-05 (73)	2.5631E-05 (73)
15	6.8363E-05 (330)	6.1852E-05 (330)	5.0749E-05 (330)	3.9099E-05 (330)	2.8653E-05 (330)
16	2.4570E-05 (193)	2.0845E-05 (265)	1.8947E-05 (265)	1.5543E-05 (265)	1.1878E-05 (265)
17	2.8149E-05 (191)	2.6191E-05 (191)	2.1921E-05 (191)	1.7117E-05 (191)	1.2688E-05 (191)
18	2.7616E-05 (95)	2.8782E-05 (95)	2.7339E-05 (95)	2.4005E-05 (95)	1.9718E-05 (95)
19	2.5308E-05 (94)	2.4978E-05 (94)	2.2100E-05 (94)	1.7948E-05 (94)	1.3798E-05 (96)
20	2.6211E-05 (253)	2.3255E-05 (164)	2.0395E-05 (164)	1.7101E-05 (164)	1.3665E-05 (164)
21	2.8223E-05 (263)	2.8291E-05 (263)	2.5400E-05 (263)	2.0926E-05 (263)	1.6178E-05 (263)
22	2.4622E-05 (51)	2.1866E-05 (309)	2.0286E-05 (263)	1.7864E-05 (263)	1.4585E-05 (263)
23	2.8787E-05 (18)	2.5978E-05 (9)	2.4141E-05 (61)	2.2461E-05 (61)	1.9186E-05 (61)
24	2.8702E-05 (293)	2.3375E-05 (293)	2.0946E-05 (61)	2.2328E-05 (61)	2.1933E-05 (61)
25	1.9267E-05 (71) C	1.7893E-05 (71) C	1.5022E-05 (71) C	1.2352E-05 (288)	1.0184E-05 (288)
26	2.0120E-05 (308)	1.7030E-05 (308)	1.2778E-05 (308)	8.9418E-06 (308)	6.7001E-06 (300)
27	1.5719E-05 (290)	1.3083E-05 (290)	1.1620E-05 (242)	1.0312E-05 (242)	8.7723E-06 (242)
28	1.6729E-05 (127)	1.2593E-05 (345)	1.0920E-05 (345)	8.8317E-06 (25) C	9.2517E-06 (97)
29	1.5404E-05 (179)	1.4036E-05 (179)	1.1617E-05 (179)	1.0166E-05 (248)	9.4401E-06 (248)
30	1.7033E-05 (179)	1.5044E-05 (319)	1.3009E-05 (319)	1.1008E-05 (221)	9.5139E-06 (281)
31	2.0884E-05 (172)	2.1146E-05 (273)	1.9540E-05 (273)	1.6499E-05 (273)	1.4390E-05 (217)
32	2.6066E-05 (230)	2.6247E-05 (230)	2.3790E-05 (230)	1.9821E-05 (230)	1.5513E-05 (230)
33	2.6127E-05 (197)	2.2969E-05 (197)	1.9329E-05 (70)	1.5858E-05 (70)	1.3923E-05 (222) C
34	3.9963E-05 (169)	3.8297E-05 (169)	3.3861E-05 (261)	2.9914E-05 (261)	2.4608E-05 (261)
35	5.9468E-05 (181)	5.4169E-05 (181)	4.5091E-05 (181)	3.5215E-05 (181)	2.6134E-05 (181)
36	6.0151E-05 (197)	5.5598E-05 (197)	4.6589E-05 (197)	3.6504E-05 (197)	2.7135E-05 (197)

TABLE 8.5.4 CRSTER EXAMPLE -- OUTPUT (RINGS 6-10) (cont.)

PLANT NAME: CRSTER CLASS EXAMPLE   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 5.9134E-05 DIRECTION= 36 DISTANCE= 1.7 KM DAY=188

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	1.7 KM	2.2 KM	2.9 KM	3.8 KM	5.0 KM
1	4.3848E-05 (316)	4.3263E-05 (86)	3.7355E-05 (86)	2.9905E-05 (86)	2.2594E-05 (86)
2	4.4125E-05 (120)	3.9517E-05 (120)	3.2212E-05 (120)	2.5321E-05 (316)	1.8902E-05 (76)
3	3.7591E-05 (162)	3.1059E-05 (162)	2.3719E-05 (162)	2.0013E-05 (204)	1.6532E-05 (196)
4	3.1529E-05 (108)	2.6042E-05 (108)	2.0427E-05 (77)	1.7124E-05 (195)	1.4032E-05 (77)
5	2.6739E-05 (141)	2.4725E-05 (195)	2.0871E-05 (141)	1.6359E-05 (141)	1.5933E-05 (41)
6	1.6261E-05 (338)	1.5713E-05 (234)	1.5718E-05 (292)	1.4614E-05 (338)	1.4558E-05 (43)
7	1.6156E-05 (63) C	1.9232E-05 (63) C	1.8107E-05 (225)	1.5760E-05 (225)	1.4037E-05 (18)
8	1.0305E-05 (130)	1.1607E-05 (357)	1.3870E-05 (357)	1.4404E-05 (357)	1.3387E-05 (357)
9	1.6862E-05 (150)	1.2404E-05 (150)	1.3627E-05 (274)	1.3770E-05 (212)	1.4922E-05 (212)
10	1.3682E-05 (243)	1.0958E-05 (243)	8.1825E-06 (358)	9.4207E-06 (22)	9.6379E-06 (22)
11	1.3101E-05 (149)	1.1262E-05 (103)	1.3054E-05 (357)	1.4565E-05 (347)	1.4835E-05 (347)
12	2.0265E-05 (130)	1.7246E-05 (130)	1.4402E-05 (30)	1.3259E-05 (30)	1.1273E-05 (30)
13	3.5954E-05 (93)	3.3131E-05 (50)	2.8870E-05 (50)	2.3293E-05 (50)	1.7716E-05 (50)
14	5.3621E-05 (136)	4.7384E-05 (50)	4.0432E-05 (50)	3.2153E-05 (50)	2.4206E-05 (50)
15	4.8391E-05 (322)	4.5585E-05 (322)	3.8666E-05 (322)	3.0470E-05 (322)	2.2689E-05 (322)
16	2.2860E-05 (346)	2.0786E-05 (193)	1.6323E-05 (346)	1.2397E-05 (346)	9.6938E-06 (156)
17	2.1915E-05 (235)	1.6991E-05 (51)	1.5081E-05 (51)	1.2330E-05 (51)	9.4862E-06 (51)
18	2.4781E-05 (163)	1.9892E-05 (263)	1.7962E-05 (74)	1.6417E-05 (74)	1.3881E-05 (74)
19	2.2475E-05 (68)	1.8786E-05 (156)	1.6931E-05 (96)	1.5802E-05 (96)	1.3662E-05 (94)
20	2.5163E-05 (164)	2.1164E-05 (253)	1.7421E-05 (298)	1.4376E-05 (298)	1.1811E-05 (263)
21	2.2775E-05 (132)	1.9310E-05 (132)	1.5239E-05 (132)	1.1604E-05 (132)	1.0486E-05 (231)
22	2.2646E-05 (283)	2.1239E-05 (51)	2.0068E-05 (309)	1.6548E-05 (309)	1.2618E-05 (309)
23	2.6490E-05 (9)	2.5719E-05 (18)	2.3682E-05 (9)	2.0722E-05 (9)	1.7693E-05 (9)
24	2.4630E-05 (255)	1.9683E-05 (221)	1.7607E-05 (221)	1.5572E-05 (79)	1.3989E-05 (230)
25	1.8563E-05 (288)	1.6611E-05 (288)	1.4503E-05 (288)	1.1685E-05 (71) C	1.0044E-05 (230)
26	1.9329E-05 (92)	1.4707E-05 (92)	1.0459E-05 (354)	7.9050E-06 (354)	6.3906E-06 (273)
27	1.5027E-05 (65) C	1.2767E-05 (242)	9.5764E-06 (290)	7.8322E-06 (351)	6.8922E-06 (61)
28	1.2483E-05 (345)	1.2482E-05 (127)	1.0452E-05 (82)	8.8281E-06 (97)	7.0776E-06 (25) C
29	1.4746E-05 (123)	1.0879E-05 (199)	1.0333E-05 (248)	8.9791E-06 (179)	8.8115E-06 (347)
30	1.5663E-05 (199)	1.3966E-05 (179)	1.2974E-05 (221)	9.9632E-06 (319)	9.1634E-06 (272)
31	2.0500E-05 (273)	1.8623E-05 (172)	1.5108E-05 (172)	1.3552E-05 (217)	1.3041E-05 (273)
32	2.1709E-05 (60)	2.0640E-05 (60)	1.8572E-05 (58)	1.6088E-05 (58)	1.3215E-05 (113)
33	2.4769E-05 (171)	2.1864E-05 (337)	1.8842E-05 (337)	1.5735E-05 (222) C	1.2173E-05 (70)
34	3.6534E-05 (189)	3.4917E-05 (261)	3.3715E-05 (169)	2.7966E-05 (169)	2.2034E-05 (169)
35	5.1200E-05 (117)	4.7264E-05 (117)	4.0354E-05 (117)	3.2448E-05 (117)	2.5593E-05 (171)
36	5.9134E-05 (188)	5.1010E-05 (188)	4.0719E-05 (188)	3.2064E-05 (76)	2.4594E-05 (76)

TABLE 8.5.5 ISCST EXAMPLE -- INPUT DATA

```
REFINED EXAMPLE
 1 4 1 0 0 1 1 0 0 0 0 0 0 1 1 0 1 1 1 0 1 1 0 1 1 1 1 1 1 2
    1    10    36     0     0     0     0     0
     500.      700.      900.     1100.     1300.     1700.     2200.     2900.
    3800.     5000.
      10.       10.
     10.0      1.54      3.09      5.14      8.23      10.8
             0  GRAMS/SECONDMICROGRAMS/CUBIC METER       9 3
11111111111111111111111111111111111111111111111111111111111111111111111111111111
11111111111111111111111111111111111111111111111111111111111111111111111111111111
11111111111111111111111111111111111111111111111111111111111111111111111111111111
11111111111111111111111111111111111111111111111111111111111111111111111111111111
1111111111111111111111111111111111111111111111
 23169    83  3160    83
    500 00    100.      0.      0.      0.  35.0 432.0 11.70  2.40
```

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT

```
    ISCST (DATED 86322)
    AN AIR QUALITY DISPERSION MODEL IN
    SECTION 1.  GUIDELINE MODELS
    IN UNAMAP (VERSION 6)  JULY 86.


              *** REFINED EXAMPLE                                          ***


CALCULATE (CONCENTRATION=1,DEPOSITION=2)                              ISW(1) =   1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)               ISW(2) =   4
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)                      ISW(3) =   1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)                              ISW(4) =   0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)                         ISW(5) =   0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)                      ISW(6) =   1

COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)
WITH THE FOLLOWING TIME PERIODS:
  HOURLY (YES=1,NO=0)                                                 ISW(7) =   1
  2-HOUR (YES=1,NO=0)                                                 ISW(8) =   0
  3-HOUR (YES=1,NO=0)                                                 ISW(9) =   0
  4-HOUR (YES=1,NO=0)                                                ISW(10) =   0
  6-HOUR (YES=1,NO=0)                                                ISW(11) =   0
  8-HOUR (YES=1,NO=0)                                                ISW(12) =   0
  12-HOUR (YES=1,NO=0)                                               ISW(13) =   0
  24-HOUR (YES=1,NO=0)                                               ISW(14) =   1
PRINT 'N'-DAY TABLE(S) (YES=1,NO=0)                                  ISW(15) =   1

PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE
SPECIFIED BY ISW(7) THROUGH ISW(14):
  DAILY TABLES (YES=1,NO=0)                                          ISW(16) =   0
  HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)                       ISW(17) =   1
  MAXIMUM 50 TABLES (YES=1,NO=0)                                     ISW(18) =   1
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)            ISW(19) =   1
RURAL-URBAN OPTION (RU.=0,UR. MODE 1=1,UR. MODE 2=2,UR. MODE 3=3)    ISW(20) =   0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)            ISW(21) =   1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3)     ISW(22) =   1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES>0)                    ISW(23) =   0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)                ISW(24) =   1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)          ISW(25) =   2
PROGRAM USES BUOYANCY INDUCED DISPERSION (YES=1,NO=2)                ISW(26) =   1
CONCENTRATIONS DURING CALM PERIODS SET = 0 (YES=1,NO=2)              ISW(27) =   1
REG. DEFAULT OPTION CHOSEN (YES=1,NO=2)                              ISW(28) =   1
TYPE OF POLLUTANT TO BE MODELLED (1=SO2,2=OTHER)                     ISW(29) =   1
DEBUG OPTION CHOSEN (1=YES,2=NO)                                     ISW(30) =   2

NUMBER OF INPUT SOURCES                                               NSOURC =   1
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)                              NGROUP =   0
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)                  IPERD =   0
NUMBER OF X (RANGE) GRID VALUES                                       NXPNTS =  10
NUMBER OF Y (THETA) GRID VALUES                                       NYPNTS =  36
NUMBER OF DISCRETE RECEPTORS                                          NXWYPT =   0
SOURCE EMISSION RATE UNITS CONVERSION FACTOR                             TK=.10000E+07
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED                     ZR =  10.00  METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA                             IMET =   9
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION                  DECAY = .000000E+00
```

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

SURFACE STATION NO.	ISS = 23169
YEAR OF SURFACE DATA	ISY = 83
UPPER AIR STATION NO.	IUS = 3160
YEAR OF UPPER AIR DATA	IUY = 83
ALLOCATED DATA STORAGE	LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN	MIMIT = 5343 WORDS

*** REFINED EXAMPLE ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

*** REFINED EXAMPLE ***

*** RANGES OF POLAR GRID SYSTEM ***
(METERS)

500.0,	700.0,	900.0,	1100.0,	1300.0,	1700.0,	2200.0,	2900.0,	3800.0,	5000.0,

*** RADIAL ANGLES OF POLAR GRID SYSTEM ***

(DEGREES)

10.0,	20.0,	30.0,	40.0,	50.0,	60.0,	70.0,	80.0,	90.0,	100.0,
110.0,	120.0,	130.0,	140.0,	150.0,	160.0,	170.0,	180.0,	190.0,	200.0,
210.0,	220.0,	230.0,	240.0,	250.0,	260.0,	270.0,	280.0,	290.0,	300.0,
310.0,	320.0,	330.0,	340.0,	350.0,	360.0,				

*** REFINED EXAMPLE ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
5	0	0	0	.10000E+03	.0	.0	.0	35.00	432.00	11.70	2.40	.00	.00	.00

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

```
* CALM HOURS (=1) FOR DAY  23 *  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  25 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  36 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
* CALM HOURS (=1) FOR DAY  37 *  1  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  52 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  54 *  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  55 *  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  63 *  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  64 *  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  65 *  1  0  0  0  0  1  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  71 *  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY  75 *  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 105 *  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 107 *  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 111 *  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 222 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 294 *  0  0  0  0  0     0  1  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 295 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
* CALM HOURS (=1) FOR DAY 313 *  0  0  0  0  0  0  0  0  0  0  1  1  1  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 326 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
* CALM HOURS (=1) FOR DAY 335 *  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 336 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 340 *  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 341 *  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
* CALM HOURS (=1) FOR DAY 359 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
* CALM HOURS (=1) FOR DAY 363 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
```

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

'N'-DAY
365 DAYS
SGROUP# 1

*** REFINED EXAMPLE ***

* 365-DAY AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 7.41596 AND OCCURRED AT (1700.0, 360.0) *

DIRECTION /	RANGE (METERS)								
(DEGREES) /	500.0	700.0	900.0	1100.0	1300.0	1700.0	2200.0	2900.0	3800.0
360.0 /	1.53173	3.68207	5.40855	6.53304	7.06770	7.41596	7.18513	6.46879	5.51500
350.0 /	1.33365	3.19491	4.61441	5.53993	5.98676	6.28282	6.10008	5.50513	4.69333
340.0 /	.91855	2.20016	3.10601	3.68836	3.96806	4.14148	4.00815	3.60993	3.07360
330.0 /	.76604	1.81483	2.51039	2.93687	3.12547	3.19104	3.01066	2.63917	2.19576
320.0 /	.63397	1.47637	1.97315	2.26399	2.38819	2.40656	2.24006	1.93510	1.58896
310.0 /	.57011	1.29743	1.70362	1.93753	2.03688	2.03990	1.88667	1.61804	1.32064
300.0 /	.50374	1.14686	1.48170	1.65163	1.70576	1.65119	1.47755	1.23039	.98507
290.0 /	.42237	1.00124	1.30271	1.44979	1.49078	1.42653	1.26291	1.04669	.84317
280.0 /	.44797	1.07219	1.39803	1.55207	1.59193	1.51352	1.32774	1.08172	.84549
270.0 /	.54921	1.30928	1.71656	1.90726	1.95208	1.84603	1.61256	1.31190	1.02866
260.0 /	.69626	1.64889	2.13615	2.34768	2.38282	2.22704	1.92458	1.54369	1.18870
250.0 /	1.02641	2.43593	3.15549	3.45180	3.48657	3.24014	2.79945	2.26333	1.76931
240.0 /	1.39784	3.31766	4.32848	4.75174	4.80138	4.44327	3.80976	3.05657	2.38028
230.0 /	1.52827	3.52038	4.50656	4.89307	4.90843	4.49900	3.82461	3.03247	2.32231
220.0 /	1.44773	3.25590	4.12637	4.47364	4.49097	4.12911	3.52395	2.80666	2.16220
210.0 /	1.27544	2.84351	3.58642	3.87473	3.87547	3.53223	2.98562	2.35747	1.80568
200.0 /	1.06439	2.39814	3.03459	3.29010	3.29914	3.01830	2.55020	1.99772	1.50468
190.0 /	.92549	2.17873	2.83139	3.14302	3.21672	3.05190	2.67693	2.18401	1.70728
180.0 /	.85900	2.12081	2.83579	3.19614	3.29752	3.15257	2.78195	2.28833	1.80931
170.0 /	.69893	1.77892	2.41924	2.74806	2.84345	2.72717	2.40723	1.97086	1.54185
160.0 /	.64614	1.69509	2.35992	2.70964	2.82040	2.73879	2.45281	2.04555	1.63798
150.0 /	.67195	1.85607	2.70988	3.18721	3.35560	3.31641	3.00450	2.51654	2.00916
140.0 /	.76675	2.07290	3.03311	3.57018	3.76053	3.73286	3.40273	2.86537	2.28892
130.0 /	.69438	1.80474	2.56297	2.98485	3.13918	3.12755	2.88782	2.49064	2.05750
120.0 /	.50225	1.29476	1.80595	2.10994	2.24551	2.28407	2.15512	1.90858	1.62199
110.0 /	.31219	.81567	1.12986	1.34661	1.47278	1.57390	1.56666	1.47661	1.33551
100.0 /	.27674	.67895	.90564	1.06133	1.15420	1.23668	1.24828	1.20320	1.11289
90.0 /	.28340	.64936	.85198	1.00526	1.11468	1.27871	1.42114	1.52865	1.56266
80.0 /	.27611	.63669	.85200	1.02659	1.16101	1.39043	1.61125	1.79047	1.86531
70.0 /	.29431	.73758	1.05404	1.32103	1.52678	1.86343	2.15331	2.34666	2.38349
60.0 /	.38211	1.00625	1.50495	1.90965	2.19898	2.62999	2.95747	3.13623	3.11700
50.0 /	.53153	1.31212	1.93692	2.40392	2.70431	3.11892	3.40923	3.54335	3.48883
40.0 /	.71574	1.73762	2.53002	3.04269	3.30024	3.54123	3.57872	3.42096	3.11879
30.0 /	1.05627	2.48735	3.54475	4.14736	4.38116	4.47327	4.28825	3.87756	3.36641
20.0 /	1.25536	2.95441	4.30235	5.12680	5.48110	5.66082	5.42576	4.85418	4.13966
10.0 /	1.37317	3.27667	4.79579	5.72916	6.12123	6.26679	5.89986	5.13578	4.23137

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

'N'-DAY
365 DAYS
SGROUP# 1

*** REFINED EXAMPLE ***

* 365-DAY AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 7.41596 AND OCCURRED AT (1700.0, 360.0) *

RANGE (METERS)

DIRECTION / (DEGREES) /	5000.0
360.0 /	4.47918
350.0 /	3.80308
340.0 /	2.48363
330.0 /	1.74771
320.0 /	1.25433
310.0 /	1.03552
300.0 /	.76387
290.0 /	.66444
280.0 /	.63866
270.0 /	.78170
260.0 /	.88442
250.0 /	1.34511
240.0 /	1.80989
230.0 /	1.72967
220.0 /	1.62263
210.0 /	1.34955
200.0 /	1.09646
190.0 /	1.28999
180.0 /	1.38178
170.0 /	1.15877
160.0 /	1.26659
150.0 /	1.54579
140.0 /	1.75177
130.0 /	1.63717
120.0 /	1.33451
110.0 /	1.15593
100.0 /	.98391
90.0 /	1.49760
80.0 /	1.80533
70.0 /	2.24432
60.0 /	2.89066
50.0 /	3.23165
40.0 /	2.69834
30.0 /	2.80001
20.0 /	3.37650
10.0 /	3.32720

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

HIGH
1-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 280.02350 AND OCCURRED AT (700.0, 10.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 500.0	700.0	900.0	1100.0	1300.0
360.0 /	242.56540 (184,12)	278.66780 (188,13)	268.51970 (188,13)	250.65740 (215,14)	230.33540 (215,14)
350.0 /	222.84590 (236,11)	271.99840 (169,11)	264.21570 (169,11)	243.82620 (167,13)	236.17310 (167,13)
340.0 /	236.38170 (236,11)	239.25470 (205,12)	257.32650 (168,13)	248.65600 (168,13)	227.91950 (198,11)
330.0 /	227.88330 (169,10)	269.39360 (169,10)	267.27140 (171,12)	249.84660 (201,12)	230.65160 (201,12)
320.0 /	172.11810 (158,12)	240.87160 (206,11)	249.98430 (189,13)	235.50410 (189,13)	223.97570 (199, 9)
310.0 /	218.52860 (141,12)	247.11120 (179,12)	249.26500 (271,15)	242.88140 (201,10)	224.86380 (201,10)
300.0 /	231.83270 (141,12)	241.31300 (127,11)	256.36860 (250,12)	242.56640 (216,13)	234.35960 (216,13)
290.0 /	135.55260 (127,11)	256.89890 (147,13)	235.45150 (194,10)	219.73600 (243,13)	219.82530 (243,13)
280.0 /	231.70310 (143,11)	223.87180 (143,11)	226.28440 (193,12)	209.17890 (199,10)	200.43810 (160,17)
270.0 /	234.55310 (154,11)	247.91130 (170,12)	239.89990 (243,14)	236.20460 (267,12)	220.96410 (267,12)
260.0 /	233.20400 (176,13)	234.47840 (170,12)	238.18830 (218,11)	232.86130 (193,17)	232.49680 (193,17)
250.0 /	247.29320 (176,13)	258.47490 (220,13)	242.96340 (215,13)	236.20460 (233,10)	220.96410 (233,10)
240.0 /	244.41460 (158,11)	258.21860 (186,11)	241.52560 (186,11)	235.61810 (180, 9)	225.05130 (180, 9)
230.0 /	227.23610 (168,10)	252.38430 (168,11)	240.30620 (161,12)	236.24940 (203,13)	230.47980 (203,13)
220.0 /	241.28340 (157,11)	255.49910 (184,11)	240.53260 (176,14)	240.34000 (167,10)	227.47940 (157,17)
210.0 /	264.09850 (194,11)	247.61180 (157,13)	240.30620 (146,11)	218.70230 (220,15)	219.18220 (255,11)
200.0 /	250.91910 (247,11)	254.11410 (210,10)	241.50630 (186,12)	241.63750 (257,12)	234.53370 (257,12)
190.0 /	228.71560 (248,12)	253.39170 (145,10)	233.21420 (217,13)	231.32240 (239,16)	232.13490 (239,16)
180.0 /	237.91480 (176,10)	253.45830 (147,12)	235.18740 (217,12)	230.99310 (263,13)	224.12510 (164,15)
170.0 /	234.72330 (144,11)	249.08490 (223,11)	229.73230 (210,14)	236.18920 (210,14)	235.92320 (210,16)
160.0 /	234.72350 (144,11)	229.02780 (175,11)	242.35390 (134,12)	228.82800 (134,12)	226.56710 (193,15)
150.0 /	184.50670 (235,13)	251.23250 (235,13)	236.80010 (191,12)	226.42350 (191,12)	222.50630 (210,15)
140.0 /	235.43870 (136,10)	256.74630 (136,10)	241.61390 (136,11)	226.54920 (136,13)	205.54300 (136,13)
130.0 /	242.84480 (223,13)	272.77910 (150,10)	255.44540 (150,10)	220.13140 (134,13)	222.28780 (257,15)
120.0 /	250.18920 (146,10)	240.35410 (150,11)	258.17490 (150,11)	239.54040 (150,11)	210.83340 (150,11)
110.0 /	174.83040 (146,10)	208.89690 (116,11)	205.76870 (208, 8)	206.04090 (262,13)	200.55400 (262,13)
100.0 /	196.30690 (145,11)	257.68880 (145,11)	220.97770 (150, 8)	232.29260 (150, 8)	223.35020 (185,14)
90.0 /	194.16870 (104,12)	244.45670 (147,10)	232.22060 (144,13)	235.60510 (194,13)	226.61060 (194,13)
80.0 /	221.52150 (143,13)	226.31450 (122,11)	236.45100 (175,15)	215.82730 (175,15)	185.02660 (175,15)
70.0 /	249.17640 (143,13)	235.93820 (143,13)	228.10010 (121,15)	209.17900 (237,13)	206.23630 (207,16)
60.0 /	180.18520 (130,13)	252.32000 (226,13)	242.28340 (130,12)	229.76540 (130,12)	205.09880 (130,12)
50.0 /	215.95290 (120,13)	271.76720 (195,12)	255.40670 (195,12)	219.83960 (195,10)	204.78370 (166,13)
40.0 /	222.26600 (195,11)	257.52510 (195,11)	235.95050 (169,13)	217.66850 (223,15)	220.57210 (223,15)
30.0 /	250.97630 (151,13)	274.80440 (151,13)	260.40230 (187,13)	237.31740 (178,12)	231.28550 (178,12)
20.0 /	250.97620 (151,12)	277.47940 (195,13)	264.21570 (205,13)	239.69540 (236,13)	220.86570 (233,11)
10.0 /	249.33290 (151,10)	280.02350 (151,11)	268.05550 (209,12)	248.31920 (201,11)	225.46640 (197,13)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

HIGH
1-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 280.02350 AND OCCURRED AT (700.0, 10.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1700.0	2200.0	2900.0	3800.0	5000.0
360.0 /	199.27860 (216,16)	179.04910 (188,15)	162.89380 (184, 5)	167.87210 (184, 5)	156.45950 (184, 5)
350.0 /	234.02250 (10,10)	225.14150 (10,10)	185.27080 (10,10)	152.44230 (290, 7)	143.57040 (332,17)
340.0 /	199.78470 (13, 9)	232.14150 (13, 9)	222.62850 (13, 9)	186.66200 (13, 9)	147.56490 (13, 9)
330.0 /	199.39590 (225,16)	178.68250 (225,16)	151.69270 (208,15)	125.28190 (155,20)	138.70700 (155,20)
320.0 /	194.75150 (220,16)	172.57000 (182,14)	149.45120 (182,14)	124.91980 (209,15)	120.59340 (363, 4)
310.0 /	194.91850 (146,14)	166.77400 (172,17)	147.94940 (167,14)	123.19750 (217,20)	134.83220 (305,24)
300.0 /	195.30870 (199,11)	165.50110 (203,16)	145.91820 (203,16)	120.86060 (223,18)	127.22330 (281,19)
290.0 /	194.00560 (258,15)	167.91480 (219,18)	144.71110 (219,18)	128.11940 (248,16)	137.43720 (302,18)
280.0 /	198.51170 (160,17)	168.25650 (160,17)	139.91350 (245, 8)	121.59760 (210,20)	114.06610 (97, 6)
270.0 /	192.22390 (153,14)	172.51890 (215,15)	155.35400 (215,15)	128.42910 (215,15)	123.21960 (61, 4)
260.0 /	201.25110 (193,17)	169.46720 (14, 9)	171.76400 (14, 9)	152.56140 (14, 9)	137.90200 (300,17)
250.0 /	207.27140 (5,11)	207.62010 (5,11)	174.16880 (5,11)	138.39000 (5,11)	146.99470 (231, 5)
240.0 /	193.26300 (144,16)	179.99370 (217,16)	148.96930 (217,16)	137.41680 (24,11)	137.19470 (160, 1)
230.0 /	203.49700 (214,17)	192.65810 (269,13)	162.43780 (269,13)	128.81610 (269,13)	111.15840 (308, 8)
220.0 /	203.92030 (253,17)	172.31470 (253,17)	149.07210 (192, 5)	143.85780 (192, 5)	150.22030 (253, 5)
210.0 /	202.77610 (255,11)	169.13980 (148,16)	140.74940 (263, 1)	122.97870 (229, 3)	136.57750 (229, 3)
200.0 /	196.18940 (257,12)	160.63690 (164, 8)	142.88870 (297,12)	120.82920 (164, 5)	109.54010 (263,24)
190.0 /	202.23780 (239,16)	178.68250 (256,15)	144.87780 (15, 9)	152.96420 (15, 9)	135.87250 (15, 9)
180.0 /	203.41830 (259,12)	197.93430 (4,11)	203.81190 (4,11)	177.76080 (4,11)	141.51010 (4,11)
170.0 /	204.38160 (210,16)	175.81560 (143,16)	138.28450 (191, 8)	130.74890 (54, 9)	124.23270 (54, 9)
160.0 /	206.07460 (193,15)	170.77440 (244,13)	153.39530 (343,10)	136.29350 (343,10)	126.68940 (251, 5)
150.0 /	192.13830 (210,15)	161.12580 (297, 6)	141.83660 (297,11)	115.65500 (297,11)	132.90000 (18,18)
140.0 /	185.22200 (190,23)	173.40830 (257,16)	144.45500 (257,16)	120.88670 (140, 8)	107.63360 (269,21)
130.0 /	203.49700 (257,15)	165.30010 (228, 7)	141.02230 (226, 7)	120.16440 (349,17)	122.04750 (185,19)
120.0 /	193.22640 (364,10)	181.41360 (364,10)	195.39900 (5,10)	196.74430 (48, 8)	170.65960 (48, 8)
110.0 /	220.83310 (364,10)	209.44760 (364,10)	170.61500 (364,10)	137.20500 (2, 9)	132.71770 (335,22)
100.0 /	204.13900 (185,14)	188.05080 (8, 9)	189.95090 (8, 9)	165.92030 (8, 9)	133.24960 (8, 9)
90.0 /	204.71360 (255,16)	171.71760 (255,16)	139.24190 (185,17)	122.14440 (212, 1)	139.85770 (212, 1)
80.0 /	181.71190 (153,16)	162.65470 (240, 8)	175.19380 (8, 8)	174.81260 (8, 8)	158.09480 (8, 8)
70.0 /	202.36820 (207,16)	170.41400 (207,16)	141.22760 (252,20)	125.58260 (252,17)	143.57040 (60,24)
60.0 /	175.09760 (182, 6)	163.63490 (182, 6)	137.71810 (259, 8)	126.50100 (220,20)	132.53680 (321, 5)
50.0 /	198.51150 (160,16)	168.48830 (240,17)	145.07060 (240,17)	123.91680 (252,19)	142.99040 (19,19)
40.0 /	194.45460 (223,15)	174.41310 (187,14)	154.40520 (188,17)	127.84690 (188,17)	136.17610 (160, 5)
30.0 /	198.72980 (195,14)	172.06990 (251,13)	152.73620 (260,15)	146.43440 (12, 8)	149.95700 (257, 7)
20.0 /	195.93350 (200,14)	203.51040 (342, 9)	214.15870 (342, 9)	189.78820 (342, 9)	152.61180 (342, 9)
10.0 /	196.71570 (174,14)	174.17180 (174,14)	147.04530 (161,15)	128.15680 (203,20)	116.60370 (146, 5)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

2ND HIGH
1-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* SECOND HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 276.50600 AND OCCURRED AT (700.0, 360.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 500.0	700.0	900.0	1100.0	1300.0
360.0 /	230.20530 (179,11)	276.50600 (246,11)	267.07790 (149,13)	249.78210 (188,12)	229.72200 (188,12)
350.0 /	215.78930 (123,13)	254.70750 (207,11)	264.21320 (207,11)	242.40560 (241,11)	231.92550 (188,10)
340.0 /	230.71120 (153,12)	234.40430 (153,12)	238.69890 (205,12)	233.97510 (198,11)	224.59070 (168,13)
330.0 /	189.47800 (170,11)	266.92590 (171,12)	264.21320 (173,12)	242.40550 (259,15)	228.71580 (181,14)
320.0 /	170.64790 (224,13)	237.14330 (126,11)	239.77270 (113,12)	232.42000 (113,12)	210.39300 (113,12)
310.0 /	205.15200 (179,12)	244.41640 (224,13)	241.98980 (201,10)	233.53600 (271,15)	216.59050 (171,10)
300.0 /	210.42880 (115,13)	237.89470 (250,12)	234.58150 (180,12)	239.46780 (199,11)	232.90450 (199,11)
290.0 /	133.78520 (141,12)	215.29700 (194,10)	221.69770 (123,12)	215.20070 (194,10)	204.81860 (240, 9)
280.0 /	184.73600 (154,11)	218.39510 (220,12)	226.28430 (218, 9)	205.86970 (193,12)	188.07610 (66,13)
270.0 /	231.70320 (143,11)	235.15210 (154,11)	231.69830 (267,12)	222.54790 (216,15)	215.83650 (174,10)
260.0 /	178.43850 (170,12)	225.66420 (215,12)	228.31830 (253,12)	218.20390 (214,14)	212.94450 (242,10)
250.0 /	234.72340 (239,11)	254.91820 (249,12)	241.22380 (186,13)	221.12630 (148,13)	216.27420 (299,12)
240.0 /	234.72340 (239,11)	242.16580 (141,10)	232.22220 (238,14)	232.70660 (238,14)	220.09430 (232,13)
230.0 /	217.23150 (158,11)	243.12660 (214,13)	236.22110 (148,11)	235.03240 (185,11)	228.71570 (185,11)
220.0 /	241.00660 (168,10)	246.94930 (164,13)	238.69870 (216,12)	225.39440 (157,17)	223.06450 (167,10)
210.0 /	250.78110 (147,11)	247.20990 (148,10)	235.26310 (157,13)	211.78890 (284,15)	218.08690 (192,17)
200.0 /	242.56540 (248,12)	240.50020 (247,11)	236.45090 (217,11)	240.38980 (210,13)	232.73420 (210,13)
190.0 /	224.30120 (176,10)	253.32110 (161,10)	232.22070 (242,14)	224.66770 (192,10)	220.86560 (192,10)
180.0 /	214.71420 (115,12)	250.72940 (145,13)	229.33550 (218,14)	229.54710 (163,11)	221.64240 (263,13)
170.0 /	184.90060 (145,13)	237.13720 (145,13)	220.36520 (193,11)	236.17810 (210,16)	222.09880 (210,14)
160.0 /	149.83070 (223,11)	224.74920 (144,11)	232.14030 (175,11)	222.37890 (129,11)	217.79480 (140,13)
150.0 /	167.61890 (158,10)	229.88460 (139,12)	222.80960 (139,12)	223.18130 (210,15)	203.07070 (191,12)
140.0 /	228.79050 (139,10)	251.98740 (139,10)	232.85930 (136,13)	210.46300 (136,11)	201.38200 (190,23)
130.0 /	216.39900 (132,12)	237.95130 (146,13)	237.87030 (146,13)	218.97230 (150,10)	214.81340 (148,17)
120.0 /	215.81700 (223,13)	239.83370 (146,10)	209.69720 (276,12)	210.51430 (139,15)	207.69910 (139,15)
110.0 /	161.07930 (103,12)	183.69590 (145,11)	198.36870 (121,14)	205.38320 (208, 8)	186.24080 (208, 8)
100.0 /	179.55800 (238,12)	239.73910 (238,12)	218.05530 (225,11)	214.15740 (185,14)	221.77110 (150, 8)
90.0 /	179.55800 (238,12)	239.73910 (238,12)	223.52450 (234,14)	211.81050 (144,13)	209.79670 (255,16)
80.0 /	210.78970 (122,11)	219.03440 (147,10)	203.55730 (271,14)	188.58150 (271,14)	180.28220 (153,16)
70.0 /	154.47090 (121,15)	229.42700 (121,15)	227.35200 (142,14)	208.75030 (142,14)	187.65970 (237,13)
60.0 /	153.82490 (143,13)	245.33790 (130,13)	239.47250 (145,15)	217.71520 (145,15)	188.26780 (234,12)
50.0 /	208.93650 (195,12)	263.97760 (190,13)	246.19320 (190,13)	219.25350 (195,12)	200.43790 (160,16)
40.0 /	202.07180 (108,11)	250.53030 (169,13)	228.51010 (195,11)	202.62650 (169,13)	197.63300 (63,16)
30.0 /	236.65110 (156,12)	264.45000 (187,13)	258.25150 (162,13)	231.25280 (162,13)	218.23850 (195,14)
20.0 /	245.99320 (219,11)	274.80430 (151,12)	251.62060 (236,13)	233.40680 (170,14)	220.08910 (170,14)
10.0 /	241.28410 (151,11)	270.90300 (196,13)	263.50470 (196,13)	244.79850 (199,12)	225.23350 (201,11)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

2ND HIGH
1-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* SECOND HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 276.50600 AND OCCURRED AT (700.0, 360.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1700.0	2200.0	2900.0	3800.0	5000.0
360.0 /	196.39630 (188,15)	175.19350 (170,16)	153.07840 (205,17)	129.26070 (177,16)	133.08480 (350,18)
350.0 /	202.21810 (188, 9)	171.08550 (167,15)	154.40520 (167,15)	146.87380 (10,10)	142.90790 (290, 7)
340.0 /	198.95860 (189, 7)	169.64060 (208,16)	150.16060 (261,10)	126.21400 (252,24)	133.23870 (8,18)
330.0 /	195.30180 (172, 9)	176.20950 (258,16)	147.12560 (209,16)	123.41210 (178, 7)	135.66720 (53,18)
320.0 /	189.30070 (199, 9)	166.11620 (172,20)	148.10750 (172,20)	122.05260 (230,14)	114.27440 (315, 4)
310.0 /	191.88830 (213,13)	165.90100 (176,17)	143.99480 (172,17)	123.01760 (197, 6)	132.00740 (350, 7)
300.0 /	194.92230 (216,13)	156.49510 (289,15)	141.23950 (109,17)	119.64630 (109,17)	116.29260 (272, 4)
290.0 /	190.62710 (243,13)	164.56940 (213,15)	144.08900 (248,16)	124.39830 (220,17)	129.25720 (156,19)
280.0 /	184.54020 (232,16)	160.23530 (269,14)	131.25620 (365,12)	115.22080 (245, 8)	107.97580 (97,19)
270.0 /	190.28510 (69,15)	163.86590 (219,17)	146.80780 (256,16)	126.90660 (256,16)	110.30930 (213,20)
260.0 /	197.79370 (242,10)	160.38230 (242,10)	137.89350 (256,17)	127.10210 (256,17)	134.23320 (273, 5)
250.0 /	186.49070 (232,17)	158.99200 (278,15)	139.85480 (71,15)	127.11820 (231, 5)	123.21960 (111, 1)
240.0 /	191.87330 (143,17)	172.67230 (145,17)	144.05780 (145,17)	124.74720 (191,18)	125.94200 (24,11)
230.0 /	193.99290 (203,13)	163.39340 (214,17)	139.15770 (309,15)	126.12240 (210,19)	108.70170 (304,17)
220.0 /	200.22440 (165,15)	171.20830 (144,17)	143.26560 (144,17)	130.41530 (253, 5)	130.55300 (145,19)
210.0 /	200.94570 (192,17)	164.02090 (255,11)	138.69990 (147,17)	122.23260 (211,20)	122.99380 (335,18)
200.0 /	194.45460 (156,17)	160.50840 (191,23)	141.83660 (164, 8)	118.53780 (299,16)	106.64570 (79,18)
190.0 /	199.39590 (256,15)	157.14920 (239,16)	140.86920 (2,10)	121.64350 (284, 8)	121.63210 (22, 3)
180.0 /	194.58090 (299,13)	169.54850 (218,16)	156.67590 (218,16)	131.93470 (218,16)	114.14090 (110,23)
170.0 /	200.80190 (191,16)	170.56430 (191,16)	137.44140 (143,16)	117.89120 (95,16)	110.06210 (139,20)
160.0 /	188.07230 (244,13)	166.34110 (291,14)	141.72860 (163,17)	118.48490 (163,17)	114.53440 (28,20)
150.0 /	177.16160 (297, 6)	161.07660 (129,16)	138.60570 (129,16)	115.01470 (18,18)	125.86180 (165, 6)
140.0 /	177.42210 (136, 9)	159.29270 (134,16)	142.99080 (134,14)	120.75060 (134,14)	106.12150 (353, 5)
130.0 /	195.53230 (148,17)	163.39340 (257,15)	140.42630 (286,23)	116.94670 (185,19)	116.76200 (287,18)
120.0 /	190.22070 (161, 7)	180.32200 (363, 9)	194.40370 (48, 8)	177.97520 (5,10)	144.84790 (5,10)
110.0 /	181.10770 (241, 7)	167.43380 (241, 7)	152.28820 (2, 9)	134.22650 (364,10)	124.91870 (347, 8)
100.0 /	195.53240 (226,15)	172.98520 (211,12)	147.41550 (9, 9)	119.32920 (9, 9)	121.66780 (340,18)
90.0 /	187.33470 (194,13)	154.18910 (361,16)	137.64380 (361,16)	118.07860 (156,22)	123.79480 (313,20)
80.0 /	177.54320 (182, 7)	157.84520 (224, 7)	138.57410 (240, 8)	126.50100 (211, 9)	132.41560 (51,24)
70.0 /	178.75070 (287, 8)	157.83910 (287, 8)	140.32720 (252,17)	125.28180 (265,20)	138.70700 (265,20)
60.0 /	174.24160 (135,18)	161.95580 (135,18)	137.54590 (142,23)	125.52320 (211, 8)	121.95140 (47, 5)
50.0 /	176.08780 (240,17)	168.25630 (160,16)	142.34930 (141,19)	123.42080 (249, 6)	136.98700 (249, 6)
40.0 /	192.40780 (187,14)	171.08550 (188,17)	149.74790 (212,15)	127.41110 (146,20)	127.77270 (245, 2)
30.0 /	194.43080 (178,12)	172.00250 (169,20)	147.12550 (200,16)	132.32670 (260,15)	140.25050 (12, 8)
20.0 /	190.43660 (195,24)	176.56180 (261,15)	149.27080 (261,15)	126.50590 (353, 9)	122.13880 (16,20)
10.0 /	194.64450 (169,16)	170.95160 (188,16)	147.00610 (150,22)	127.26870 (161,16)	113.61710 (338, 7)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

MAX 50
1-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* 50 MAXIMUM 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *

RANK	CON.	HOUR	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	HOUR	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	280.02350	11	151	700.0	10.0	26	264.09850	11	194	500.0	210.0
2	278.66780	13	188	700.0	360.0	27	263.97760	13	190	700.0	50.0
3	277.47940	13	195	700.0	20.0	28	263.51840	13	201	700.0	10.0
4	276.50600	11	246	700.0	360.0	29	263.50470	13	196	900.0	10.0
5	276.42630	13	149	700.0	360.0	30	262.28790	11	246	900.0	360.0
6	274.80440	13	151	700.0	30.0	31	260.40230	13	187	900.0	30.0
7	274.80430	12	151	700.0	20.0	32	260.11810	10	151	700.0	10.0
8	272.77910	10	150	700.0	130.0	33	259.95420	10	162	700.0	360.0
9	272.70920	12	169	700.0	20.0	34	258.92880	10	198	900.0	350.0
10	271.99840	13	205	700.0	20.0	35	258.47490	13	220	700.0	250.0
11	271.99840	11	169	700.0	350.0	36	258.25150	13	162	900.0	30.0
12	271.76720	12	195	700.0	50.0	37	258.21860	11	186	700.0	240.0
13	270.90300	13	196	700.0	10.0	38	258.17490	11	150	900.0	120.0
14	269.39360	10	169	700.0	330.0	39	257.85600	12	236	700.0	30.0
15	268.51970	13	188	900.0	360.0	40	257.68880	11	145	700.0	100.0
16	268.09270	12	209	700.0	10.0	41	257.52510	11	195	700.0	40.0
17	268.05550	12	209	900.0	10.0	42	257.32650	13	168	900.0	340.0
18	267.27140	12	171	900.0	330.0	43	257.21810	11	196	700.0	30.0
19	267.07790	13	149	900.0	360.0	44	257.21810	13	178	700.0	10.0
20	266.92590	12	171	700.0	330.0	45	257.09630	13	120	700.0	50.0
21	264.45000	13	187	700.0	30.0	46	256.89890	13	147	700.0	290.0
22	264.21570	13	205	900.0	20.0	47	256.84520	14	186	900.0	360.0
23	264.21570	11	169	900.0	350.0	48	256.74630	10	136	700.0	140.0
24	264.21320	11	207	900.0	350.0	49	256.36860	12	250	900.0	300.0
25	264.21320	12	173	900.0	330.0	50	255.54930	11	241	900.0	350.0

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

HIGH
3-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 211.92870 AND OCCURRED AT (700.0, 50.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 500.0	700.0	900.0	1100.0	1300.0
360.0 /	113.06820 (187, 4)	173.15560 (187, 4)	186.93790 (188, 5)	192.15820 (188, 5)	183.59060 (188, 5)
350.0 /	116.10890 (125, 4)	175.86650 (125, 4)	188.47310 (181, 4)	184.24470 (181, 4)	168.43020 (117, 4)
340.0 /	94.58294 (183, 4)	141.12580 (170, 4)	151.49130 (198, 4)	156.88370 (198, 4)	148.45140 (198, 4)
330.0 /	92.09406 (205, 4)	137.95630 (205, 4)	132.19780 (205, 4)	134.73540 (197, 4)	128.89300 (267, 6)
320.0 /	77.04170 (126, 4)	152.09230 (126, 4)	141.27330 (113, 4)	145.77290 (113, 4)	137.92440 (113, 4)
310.0 /	72.84286 (141, 4)	102.80960 (126, 4)	84.65618 (248, 5)	101.00000 (176, 6)	113.42850 (176, 6)
300.0 /	77.27757 (141, 4)	109.73480 (138, 5)	130.64870 (138, 5)	125.91910 (138, 5)	113.98970 (179, 6)
290.0 /	51.49177 (127, 4)	93.18832 (123, 4)	92.61992 (123, 4)	89.26445 (127, 5)	85.55127 (127, 5)
280.0 /	77.23436 (143, 4)	78.90628 (127, 4)	102.14280 (157, 5)	110.23220 (157, 5)	106.21470 (157, 5)
270.0 /	79.61185 (154, 4)	83.33981 (253, 4)	99.71160 (216, 5)	99.23441 (216, 5)	105.14000 (65, 5)
260.0 /	77.73476 (176, 5)	102.37510 (137, 5)	121.73930 (137, 5)	127.10470 (214, 5)	122.18960 (214, 5)
250.0 /	97.82057 (239, 4)	121.97630 (239, 4)	121.81010 (137, 5)	120.75760 (267, 4)	112.70730 (267, 4)
240.0 /	106.86350 (239, 4)	145.99460 (141, 4)	173.29500 (232, 5)	189.87180 (232, 5)	185.56930 (232, 5)
230.0 /	146.99260 (168, 4)	159.90440 (216, 4)	176.44320 (216, 4)	162.33540 (216, 4)	158.91490 (18, 5)
220.0 /	139.95120 (157, 4)	163.28060 (224, 4)	160.69340 (216, 4)	142.65870 (216, 4)	141.20930 (302, 4)
210.0 /	124.22810 (157, 4)	143.48310 (138, 4)	130.36530 (103, 4)	134.18820 (255, 4)	128.84720 (191, 5)
200.0 /	96.28408 (194, 4)	137.10450 (186, 4)	148.39790 (186, 4)	154.42650 (253, 3)	162.95670 (253, 3)
190.0 /	96.39622 (176, 4)	121.93630 (176, 4)	137.26060 (137, 4)	138.28510 (137, 4)	127.76890 (137, 4)
180.0 /	98.26709 (223, 4)	139.24650 (105, 4)	163.72990 (105, 4)	159.58500 (105, 4)	146.73380 (263, 5)
170.0 /	115.75770 (223, 4)	159.65150 (223, 4)	115.29120 (105, 4)	118.13420 (105, 4)	111.10870 (105, 4)
160.0 /	108.74790 (235, 5)	192.77340 (235, 5)	187.78100 (235, 5)	161.22290 (235, 5)	144.44900 (193, 5)
150.0 /	103.27030 (235, 5)	180.42310 (191, 4)	202.56300 (191, 4)	193.12850 (191, 4)	172.86130 (191, 4)
140.0 /	140.90200 (136, 4)	171.63310 (136, 4)	156.36210 (136, 4)	153.80410 (136, 3)	150.37930 (136, 3)
130.0 /	102.75840 (132, 4)	134.41550 (132, 4)	145.83020 (92, 8)	159.15390 (92, 8)	156.06640 (92, 8)
120.0 /	83.39639 (146, 4)	109.41530 (132, 4)	101.68650 (150, 4)	101.19000 (130, 7)	101.35670 (93, 7)
110.0 /	58.27679 (146, 4)	70.18998 (116, 4)	88.47276 (275, 4)	99.50713 (275, 4)	98.81879 (275, 4)
100.0 /	79.30697 (150, 5)	134.38770 (150, 5)	141.23060 (150, 5)	127.15150 (150, 5)	108.33620 (150, 5)
90.0 /	79.48280 (122, 4)	119.68980 (150, 5)	125.10270 (150, 5)	112.07550 (150, 5)	95.05899 (150, 5)
80.0 /	93.60034 (122, 4)	129.02310 (122, 4)	108.63860 (122, 4)	86.88168 (122, 4)	69.37286 (122, 4)
70.0 /	83.05881 (143, 5)	91.58568 (226, 5)	77.08559 (226, 5)	70.88719 (130, 4)	72.47693 (141, 8)
60.0 /	87.24817 (226, 5)	163.42380 (226, 5)	144.41510 (226, 5)	116.27450 (234, 4)	112.28750 (234, 4)
50.0 /	154.26040 (195, 4)	211.92870 (195, 4)	206.74980 (195, 4)	181.81100 (195, 4)	154.74080 (195, 4)
40.0 /	139.37230 (108, 4)	168.04350 (108, 4)	159.49150 (108, 4)	140.59660 (108, 4)	129.75000 (90, 4)
30.0 /	145.40710 (196, 4)	210.53470 (196, 4)	207.77570 (196, 4)	183.13560 (196, 4)	184.89810 (162, 6)
20.0 /	144.49470 (151, 4)	154.53550 (151, 4)	141.98080 (114, 5)	153.09660 (114, 5)	152.65040 (114, 5)
10.0 /	193.54840 (151, 4)	211.25180 (151, 4)	182.03090 (151, 4)	148.70130 (151, 4)	137.42580 (100, 8)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

HIGH
3-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 211.92870 AND OCCURRED AT (700.0, 50.0) *

DIRECTION /	RANGE (METERS)				
(DEGREES) /	1700.0	2200.0	2900.0	3800.0	5000.0
360.0 /	170.99780 (162, 7)	154.61810 (162, 7)	127.53100 (114, 7)	103.15820 (114, 7)	78.78427 (114, 7)
350.0 /	151.44750 (117, 4)	137.18770 (181, 1)	123.33030 (201, 3)	102.94030 (201, 3)	89.89586 (60, 1)
340.0 /	120.38490 (198, 4)	121.65270 (190, 2)	119.41100 (190, 2)	104.94510 (190, 2)	89.14419 (37, 7)
330.0 /	137.26310 (267, 6)	129.78050 (267, 6)	110.74150 (267, 6)	87.99252 (267, 6)	66.22032 (267, 6)
320.0 /	129.85350 (230, 5)	135.86890 (230, 5)	127.66140 (230, 5)	109.42550 (230, 5)	87.70825 (230, 5)
310.0 /	117.43860 (176, 6)	105.27200 (176, 6)	83.67323 (273, 6)	79.34657 (217, 7)	84.56793 (217, 7)
300.0 /	112.88930 (179, 6)	99.74232 (172, 6)	84.85239 (172, 6)	67.23563 (172, 6)	59.37264 (272, 2)
290.0 /	81.67052 (146, 3)	78.56971 (179, 6)	70.51393 (179, 6)	57.47942 (179, 6)	49.84438 (347, 6)
280.0 /	99.76189 (345, 4)	100.64500 (345, 4)	87.27167 (345, 4)	70.11697 (345, 4)	54.85524 (345, 4)
270.0 /	105.05840 (65, 5)	89.00406 (65, 5)	65.44131 (65, 5)	45.84414 (242, 6)	41.07319 (61, 2)
260.0 /	112.65150 (308, 5)	100.41910 (308, 5)	78.80710 (308, 5)	56.93235 (308, 5)	45.96734 (300, 6)
250.0 /	92.63100 (314, 5)	91.99681 (295, 5)	77.39444 (295, 5)	66.25238 (230, 7)	60.94387 (230, 7)
240.0 /	154.59600 (232, 5)	114.91340 (232, 5)	92.28699 (295, 5)	73.51884 (61, 1)	81.74186 (61, 1)
230.0 /	158.58820 (18, 5)	135.13310 (18, 5)	101.01900 (18, 5)	90.74300 (61, 6)	75.15530 (61, 6)
220.0 /	138.85260 (51, 5)	125.42460 (51, 5)	97.68594 (51, 5)	97.51430 (28, 6)	88.93077 (28, 6)
210.0 /	113.54880 (91, 5)	90.24477 (91, 5)	77.24387 (263, 3)	73.03275 (33, 6)	77.57950 (231, 1)
200.0 /	151.34880 (253, 3)	122.51460 (253, 3)	87.98756 (253, 3)	71.39651 (284, 5)	55.88584 (284, 5)
190.0 /	100.09430 (137, 4)	89.79939 (94, 7)	82.22580 (94, 7)	68.53223 (94, 7)	55.13451 (96, 7)
180.0 /	130.23110 (159, 3)	107.57190 (159, 3)	79.59315 (159, 3)	74.76235 (95, 8)	67.61913 (95, 8)
170.0 /	103.50200 (297, 5)	98.77377 (297, 5)	85.73083 (191, 1)	70.77209 (191, 1)	54.88264 (331, 1)
160.0 /	127.97120 (193, 5)	101.24820 (346, 4)	84.95367 (297, 1)	72.78870 (297, 1)	58.14273 (297, 1)
150.0 /	131.11390 (191, 4)	122.09140 (322, 3)	106.61160 (322, 3)	86.11247 (322, 3)	65.58427 (322, 3)
140.0 /	133.11840 (93, 3)	115.48080 (93, 3)	110.81650 (73, 6)	97.23404 (73, 6)	79.00407 (73, 6)
130.0 /	138.20830 (92, 8)	121.54750 (325, 7)	119.26460 (325, 7)	105.02190 (325, 7)	85.71687 (325, 7)
120.0 /	98.75887 (93, 7)	94.72337 (48, 3)	102.50980 (48, 3)	96.59112 (48, 3)	81.40941 (48, 3)
110.0 /	95.27511 (103, 6)	87.18889 (103, 6)	86.30505 (27, 2)	93.84396 (27, 2)	91.25581 (27, 2)
100.0 /	76.00154 (150, 5)	64.28368 (247, 3)	63.31699 (8, 3)	55.30678 (8, 3)	53.25238 (38, 2)
90.0 /	68.23788 (255, 6)	57.23919 (255, 6)	55.81457 (335, 2)	71.28211 (335, 2)	78.22266 (335, 2)
80.0 /	60.57064 (153, 6)	54.21916 (240, 3)	62.56377 (113, 2)	69.67311 (279, 8)	72.63418 (281, 1)
70.0 /	86.74173 (141, 8)	89.56288 (141, 8)	82.10210 (141, 8)	70.68676 (63, 1)	75.84480 (63, 1)
60.0 /	97.87103 (338, 1)	95.24791 (338, 1)	88.23438 (292, 7)	82.17617 (292, 7)	71.70802 (319, 7)
50.0 /	114.54320 (187, 6)	106.37830 (240, 6)	93.26465 (141, 7)	81.90607 (252, 7)	68.96493 (252, 7)
40.0 /	119.07950 (90, 4)	100.82140 (60, 7)	83.45834 (245, 6)	69.53876 (245, 6)	67.85749 (135, 1)
30.0 /	173.91000 (162, 6)	149.32020 (162, 6)	117.65690 (162, 6)	90.29491 (182, 7)	70.01382 (182, 7)
20.0 /	152.92980 (120, 6)	137.61290 (120, 6)	112.52550 (120, 6)	86.73391 (120, 6)	63.77770 (120, 6)
10.0 /	125.94150 (120, 7)	114.64370 (261, 6)	96.17422 (261, 6)	80.25597 (159, 8)	66.87982 (159, 8)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

2ND HIGH
3-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 180.10990 AND OCCURRED AT (1100.0, 30.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 500.0	700.0	900.0	1100.0	1300.0
360.0 /	109.51960 (179, 4)	154.34820 (188, 5)	177.99490 (187, 4)	161.10250 (187, 4)	169.83440 (162, 7)
350.0 /	95.45126 (241, 4)	161.16740 (181, 4)	177.98980 (125, 4)	167.90430 (117, 4)	167.59940 (181, 4)
340.0 /	93.70522 (170, 4)	139.45530 (205, 4)	145.29220 (205, 4)	131.11030 (205, 4)	112.56680 (205, 4)
330.0 /	77.53033 (170, 4)	128.89160 (126, 4)	131.75060 (197, 4)	114.88950 (267, 6)	126.42890 (197, 4)
320.0 /	59.17772 (224, 5)	112.16500 (113, 4)	114.95700 (126, 4)	106.05690 (199, 3)	112.03910 (199, 3)
310.0 /	68.38531 (179, 4)	83.71423 (123, 4)	83.08833 (271, 5)	92.29974 (237, 6)	97.64107 (237, 6)
300.0 /	70.14292 (115, 5)	88.71117 (123, 4)	85.53743 (250, 4)	105.06440 (179, 6)	111.67920 (138, 5)
290.0 /	49.07898 (123, 4)	85.63296 (147, 5)	92.27660 (138, 5)	86.50195 (138, 5)	77.13620 (243, 5)
280.0 /	61.61210 (154, 4)	74.85843 (123, 4)	84.65273 (123, 4)	79.16289 (123, 4)	80.63290 (345, 4)
270.0 /	77.23537 (143, 4)	82.63710 (170, 4)	89.79928 (253, 4)	94.54637 (65, 5)	90.80623 (216, 5)
260.0 /	64.74593 (154, 4)	100.33610 (215, 4)	119.64530 (214, 5)	117.13370 (137, 5)	110.82090 (276, 5)
250.0 /	82.50851 (176, 5)	112.75460 (249, 4)	118.48260 (267, 4)	115.93240 (137, 5)	107.64790 (300, 4)
240.0 /	88.29340 (141, 4)	138.24050 (239, 4)	137.41670 (293, 4)	149.54140 (293, 4)	147.75990 (293, 4)
230.0 /	90.00149 (148, 4)	156.76720 (168, 4)	162.80420 (258, 4)	158.56650 (258, 4)	141.26080 (258, 4)
220.0 /	137.23030 (168, 4)	160.00430 (157, 4)	155.61460 (224, 4)	141.25900 (224, 4)	129.22820 (51, 5)
210.0 /	108.93280 (138, 4)	143.08240 (157, 4)	128.04540 (255, 4)	132.65450 (191, 5)	128.68890 (255, 4)
200.0 /	83.88129 (247, 4)	117.87000 (194, 4)	137.54690 (257, 4)	147.87500 (257, 4)	142.17700 (257, 4)
190.0 /	76.24025 (248, 4)	110.34430 (137, 4)	115.06370 (109, 5)	122.53140 (109, 5)	117.04990 (109, 5)
180.0 /	85.30510 (176, 4)	136.87180 (223, 4)	139.73670 (263, 5)	150.88020 (263, 5)	144.40120 (105, 4)
170.0 /	78.24115 (144, 4)	92.55468 (235, 5)	104.80160 (223, 4)	94.98930 (217, 4)	95.99086 (297, 5)
160.0 /	78.24118 (144, 4)	126.71250 (191, 4)	141.23720 (191, 4)	141.99750 (193, 5)	133.72440 (235, 5)
150.0 /	96.99155 (191, 4)	165.62960 (235, 5)	143.57790 (235, 5)	115.22530 (330, 4)	118.67530 (330, 4)
140.0 /	109.05450 (139, 4)	128.90210 (139, 4)	141.53830 (136, 3)	133.78320 (93, 3)	139.20620 (93, 3)
130.0 /	81.61311 (150, 4)	108.99440 (150, 4)	111.92260 (249, 5)	116.98460 (93, 1)	118.15190 (93, 1)
120.0 /	77.68401 (132, 4)	98.04033 (150, 4)	93.64516 (97, 5)	100.52570 (139, 5)	100.86440 (130, 7)
110.0 /	53.69309 (103, 4)	61.23197 (145, 4)	68.58958 (208, 3)	80.02693 (103, 6)	90.74524 (103, 6)
100.0 /	65.43564 (145, 4)	85.89627 (145, 4)	73.65924 (150, 3)	77.43088 (150, 3)	74.45007 (185, 5)
90.0 /	70.87846 (150, 5)	111.50980 (122, 4)	94.11821 (122, 4)	78.53503 (194, 5)	75.53688 (194, 5)
80.0 /	73.84051 (143, 5)	73.01147 (147, 4)	78.81699 (175, 5)	71.94244 (175, 5)	61.67554 (175, 5)
70.0 /	53.90716 (122, 4)	78.64607 (143, 5)	76.03340 (121, 5)	69.72632 (237, 5)	68.75032 (207, 6)
60.0 /	60.39195 (130, 5)	83.71947 (130, 5)	107.47390 (234, 4)	110.98440 (226, 5)	88.12903 (338, 1)
50.0 /	79.02998 (120, 5)	127.20950 (226, 5)	124.10710 (120, 5)	120.25490 (120, 5)	117.06100 (187, 6)
40.0 /	109.67420 (195, 4)	141.10700 (195, 4)	135.71720 (169, 5)	130.82130 (169, 5)	121.03210 (108, 4)
30.0 /	100.38180 (151, 5)	135.91080 (151, 5)	153.36670 (162, 6)	180.10990 (162, 6)	160.72330 (101, 6)
20.0 /	103.07590 (162, 4)	138.88550 (196, 4)	135.87920 (196, 4)	141.65860 (120, 6)	152.56050 (120, 6)
10.0 /	122.23070 (162, 4)	149.27020 (162, 4)	149.19260 (209, 4)	136.89370 (100, 8)	131.82820 (120, 7)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

2ND HIGH
3-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 180.10990 AND OCCURRED AT (1100.0, 30.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1700.0	2200.0	2900.0	3800.0	5000.0
360.0 /	158.79480 (188, 5)	146.83390 (197, 6)	127.13610 (162, 7)	98.55187 (162, 7)	74.79129 (273, 8)
350.0 /	137.85100 (181, 1)	134.81340 (201, 3)	122.05170 (181, 1)	99.86504 (181, 1)	80.43840 (201, 3)
340.0 /	109.26120 (190, 2)	114.97140 (169, 8)	110.53010 (169, 8)	101.78350 (37, 7)	85.37701 (190, 2)
330.0 /	105.61490 (171, 3)	95.56893 (60, 3)	92.30162 (60, 3)	79.98105 (60, 3)	64.20986 (60, 3)
320.0 /	112.25430 (113, 4)	101.67630 (107, 6)	84.64579 (107, 6)	66.12560 (107, 6)	49.16914 (107, 6)
310.0 /	90.59078 (237, 6)	84.87746 (273, 5)	83.64842 (176, 6)	74.26916 (273, 6)	60.97213 (273, 6)
300.0 /	105.67760 (172, 6)	97.71184 (179, 6)	80.48418 (319, 5)	60.56213 (319, 5)	55.14513 (229, 7)
290.0 /	77.14973 (179, 6)	70.71397 (146, 3)	51.46545 (146, 3)	48.56576 (347, 6)	45.81242 (302, 6)
280.0 /	86.12093 (157, 5)	75.06549 (7, 5)	60.51252 (250, 5)	47.66616 (250, 5)	38.02203 (97, 2)
270.0 /	73.96353 (242, 6)	68.32411 (242, 6)	57.69220 (242, 6)	44.48130 (65, 5)	36.76978 (213, 7)
260.0 /	102.88510 (276, 5)	83.50252 (276, 5)	63.79101 (8, 5)	50.85380 (14, 3)	44.74441 (273, 2)
250.0 /	92.25426 (295, 5)	79.39690 (314, 5)	67.25594 (230, 7)	63.33672 (288, 6)	59.89532 (288, 6)
240.0 /	127.24770 (293, 4)	110.88250 (295, 5)	83.64833 (28, 5)	68.35494 (295, 5)	58.74515 (264, 6)
230.0 /	127.23110 (310, 5)	106.47990 (310, 5)	100.89970 (61, 6)	73.74010 (304, 6)	69.13866 (304, 6)
220.0 /	121.96250 (302, 4)	101.81540 (265, 5)	97.46520 (28, 6)	76.08708 (192, 2)	65.69070 (192, 2)
210.0 /	108.19850 (191, 5)	88.68526 (263, 3)	69.37222 (33, 6)	72.90146 (231, 1)	69.56493 (33, 6)
200.0 /	116.06880 (257, 4)	93.52948 (284, 5)	85.45117 (284, 5)	62.47534 (298, 5)	47.95334 (298, 5)
190.0 /	95.72108 (68, 5)	84.36105 (297, 6)	69.40813 (297, 6)	56.35768 (9, 7)	53.29481 (94, 7)
180.0 /	123.06250 (263, 5)	93.28046 (263, 5)	74.74146 (95, 8)	59.25361 (4, 4)	47.17003 (4, 4)
170.0 /	94.43743 (191, 1)	95.24593 (191, 1)	85.45511 (331, 1)	70.64233 (331, 1)	54.87646 (191, 1)
160.0 /	116.92430 (346, 4)	100.47080 (193, 5)	80.34940 (346, 4)	60.76622 (346, 4)	49.91804 (156, 8)
150.0 /	125.77020 (322, 3)	114.11450 (329, 5)	97.75747 (96, 3)	81.23287 (96, 3)	63.22772 (96, 3)
140.0 /	132.62570 (136, 3)	114.61400 (134, 5)	102.07530 (134, 5)	84.07787 (134, 5)	65.30240 (134, 5)
130.0 /	113.34690 (50, 2)	113.45140 (92, 8)	91.74953 (121, 7)	76.74586 (121, 7)	67.08568 (328, 2)
120.0 /	92.36685 (93, 8)	88.93854 (30, 8)	84.59138 (30, 8)	72.76348 (30, 8)	62.75515 (356, 2)
110.0 /	83.27967 (275, 4)	69.81586 (364, 4)	71.44778 (103, 6)	79.23458 (347, 3)	82.03964 (347, 3)
100.0 /	68.04633 (185, 5)	62.68365 (8, 3)	60.00572 (247, 3)	52.98865 (38, 2)	46.67140 (121, 6)
90.0 /	66.15289 (150, 5)	51.39635 (361, 6)	46.41395 (185, 6)	55.55545 (280, 2)	58.98877 (280, 2)
80.0 /	59.18108 (182, 3)	52.61507 (224, 3)	59.31087 (279, 8)	69.35812 (281, 1)	70.82138 (279, 8)
70.0 /	67.45969 (207, 6)	68.63927 (168, 2)	72.81631 (225, 8)	69.78111 (143, 8)	73.19788 (18, 7)
60.0 /	91.42961 (234, 4)	86.17862 (201, 6)	83.07606 (338, 1)	73.82817 (213, 1)	70.39334 (292, 7)
50.0 /	110.91820 (195, 4)	101.24670 (187, 6)	92.13976 (240, 6)	79.12686 (141, 7)	66.82823 (348, 1)
40.0 /	112.05290 (60, 7)	100.61410 (90, 4)	82.56648 (60, 7)	67.66446 (135, 1)	65.94832 (245, 1)
30.0 /	148.43500 (101, 6)	126.53330 (251, 5)	109.07700 (182, 7)	88.51137 (162, 6)	63.99160 (162, 6)
20.0 /	141.67810 (114, 5)	122.60540 (114, 5)	98.13131 (114, 5)	74.72580 (114, 5)	57.44133 (317, 3)
10.0 /	125.31070 (100, 8)	110.25780 (311, 5)	91.25549 (311, 5)	75.24200 (261, 6)	61.81306 (150, 2)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

MAX 50
3-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* 50 MAXIMUM 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *

RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	211.92870	4	195	700.0	50.0	26	176.44320	4	216	900.0	230.0
2	211.25180	4	151	700.0	10.0	27	175.86650	4	125	700.0	350.0
3	210.53470	4	196	700.0	30.0	28	173.91000	6	162	1700.0	30.0
4	207.77570	4	196	900.0	30.0	29	173.29500	5	232	900.0	240.0
5	206.74980	4	195	900.0	50.0	30	173.15560	4	187	700.0	360.0
6	202.56300	4	191	900.0	150.0	31	172.86130	4	191	1300.0	150.0
7	193.54840	4	151	500.0	10.0	32	171.63310	4	136	700.0	140.0
8	193.12850	4	191	1100.0	150.0	33	170.99780	7	162	1700.0	360.0
9	192.77340	5	235	700.0	160.0	34	169.83440	7	162	1300.0	360.0
10	192.15820	5	188	1100.0	360.0	35	168.43020	4	117	1300.0	350.0
11	189.87180	5	232	1100.0	240.0	36	168.04350	4	108	700.0	40.0
12	188.47310	4	181	900.0	350.0	37	167.90430	4	117	1100.0	350.0
13	187.78100	5	235	900.0	160.0	38	167.59940	4	181	1300.0	350.0
14	186.93790	5	188	900.0	360.0	39	165.62960	5	235	700.0	150.0
15	185.56930	5	232	1300.0	240.0	40	163.84520	4	241	900.0	350.0
16	184.89810	6	162	1300.0	30.0	41	163.72990	4	105	900.0	180.0
17	184.24470	4	181	1100.0	350.0	42	163.42380	5	226	700.0	60.0
18	183.59060	5	188	1300.0	360.0	43	163.28060	4	224	700.0	220.0
19	183.13560	4	196	1100.0	30.0	44	162.95670	3	253	1300.0	200.0
20	182.03090	4	151	900.0	10.0	45	162.80420	4	258	900.0	230.0
21	181.81100	4	195	1100.0	50.0	46	162.33540	4	216	1100.0	230.0
22	180.42310	4	191	700.0	150.0	47	161.22290	5	235	1100.0	160.0
23	180.10990	6	162	1100.0	30.0	48	161.16740	4	181	700.0	350.0
24	177.99490	4	187	900.0	360.0	49	161.10250	4	187	1100.0	360.0
25	177.98980	4	125	900.0	350.0	50	160.72330	6	101	1300.0	30.0

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

HIGH
24-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 71.23228 AND OCCURRED AT (1300.0, 20.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 500.0	700.0	900.0	1100.0	1300.0
360.0 /	23.59056 (125, 1)	43.12560 (125, 1)	56.71916 (188, 1)	62.94138 (188, 1)	63.42328 (188, 1)
350.0 /	16.15236 (125, 1)	31.01683 (181, 1)	46.62612 (181, 1)	55.92572 (181, 1)	59.38997 (181, 1)
340.0 /	12.93002 (183, 1)	24.30769 (189, 1)	32.87063 (189, 1)	37.26219 (189, 1)	38.28834 (189, 1)
330.0 /	11.52223 (205, 1)	19.82856 (171, 1)	25.55953 (171, 1)	27.68275 (171, 1)	27.44992 (171, 1)
320.0 /	12.68080 (189, 1)	21.35324 (189, 1)	24.03511 (189, 1)	23.49491 (189, 1)	22.80853 (230, 1)
310.0 /	15.15492 (179, 1)	22.41608 (179, 1)	22.25804 (179, 1)	19.73589 (179, 1)	20.98240 (172, 1)
300.0 /	9.65970 (141, 1)	16.24963 (127, 1)	18.99246 (199, 1)	20.20556 (199, 1)	19.28458 (199, 1)
290.0 /	8.65885 (127, 1)	17.82383 (127, 1)	20.65323 (123, 1)	20.34995 (123, 1)	18.72577 (123, 1)
280.0 /	11.28704 (143, 1)	16.70493 (127, 1)	20.61726 (127, 1)	21.35312 (127, 1)	20.36574 (127, 1)
270.0 /	12.11389 (154, 1)	16.77837 (243, 1)	19.19276 (243, 1)	18.05627 (243, 1)	16.34893 (290, 1)
260.0 /	11.16380 (154, 1)	17.99284 (215, 1)	19.97841 (92, 1)	22.60002 (92, 1)	22.55913 (92, 1)
250.0 /	13.25203 (176, 1)	21.78914 (215, 1)	22.33437 (215, 1)	23.21512 (144, 1)	22.17228 (144, 1)
240.0 /	15.07839 (239, 1)	25.87685 (141, 1)	27.47832 (258, 1)	28.48737 (255, 1)	30.03775 (293, 1)
230.0 /	21.25614 (168, 1)	31.26625 (185, 1)	35.76819 (185, 1)	34.25389 (185, 1)	30.58023 (185, 1)
220.0 /	25.38889 (157, 1)	36.90441 (157, 1)	33.80936 (157, 1)	29.96552 (148, 1)	25.68937 (148, 1)
210.0 /	23.81118 (157, 1)	31.89096 (157, 1)	29.99240 (148, 1)	28.36629 (148, 1)	25.82368 (148, 1)
200.0 /	15.29649 (247, 1)	25.92337 (147, 1)	26.05519 (147, 1)	26.83169 (253, 1)	28.28453 (253, 1)
190.0 /	13.63750 (247, 1)	20.73384 (247, 1)	23.63808 (135, 1)	24.48669 (135, 1)	22.84801 (135, 1)
180.0 /	14.81499 (145, 1)	21.89243C(105, 1)	28.33329 (163, 1)	30.47366 (163, 1)	29.56120 (163, 1)
170.0 /	14.47251 (223, 1)	23.53411 (235, 1)	28.06630 (235, 1)	28.51168 (235, 1)	26.95182 (235, 1)
160.0 /	14.94240 (235, 1)	27.80052 (235, 1)	28.56788 (235, 1)	27.43301 (191, 1)	26.47287 (191, 1)
150.0 /	12.97850 (235, 1)	27.25272 (330, 1)	49.33572 (330, 1)	62.59972 (330, 1)	67.62091 (330, 1)
140.0 /	29.32834 (136, 1)	54.50301 (136, 1)	66.25354 (136, 1)	67.45006 (136, 1)	63.61967 (136, 1)
130.0 /	14.36405 (146, 1)	28.34158 (136, 1)	36.70656 (136, 1)	39.48106 (136, 1)	38.91554 (136, 1)
120.0 /	13.17590 (146, 1)	14.32827 (146, 1)	22.32745 (93, 1)	27.84880 (93, 1)	29.71229 (93, 1)
110.0 /	7.61175 (146, 1)	11.66714 (150, 1)	13.45914 (225, 1)	14.78030 (262, 1)	15.31068 (262, 1)
100.0 /	12.91544 (150, 1)	24.30483 (150, 1)	27.53702 (150, 1)	26.32169 (150, 1)	23.52103 (150, 1)
90.0 /	10.40655 (150, 1)	19.62815 (150, 1)	22.87436 (150, 1)	22.73111 (150, 1)	21.10663 (150, 1)
80.0 /	11.73988 (122, 1)	16.26970 (122, 1)	13.74461 (122, 1)	11.53928 (130, 1)	11.51736 (130, 1)
70.0 /	10.47577 (143, 1)	12.14540 (130, 1)	15.72274 (130, 1)	16.58025 (130, 1)	17.33659 (225, 1)
60.0 /	12.75259 (130, 1)	20.63994 (226, 1)	21.91960 (130, 1)	20.42127 (130, 1)	18.08025 (130, 1)
50.0 /	20.43347 (195, 1)	32.00277 (195, 1)	36.65903 (195, 1)	37.09832 (195, 1)	35.25993 (195, 1)
40.0 /	19.74191 (108, 1)	30.52559 (108, 1)	36.04193 (108, 1)	37.19594 (108, 1)	35.77533 (108, 1)
30.0 /	23.26310 (196, 1)	45.28065 (196, 1)	57.49986 (196, 1)	60.70372 (196, 1)	58.83536 (196, 1)
20.0 /	24.88314 (151, 1)	46.16023 (196, 1)	63.65774 (196, 1)	70.89441 (196, 1)	**71.23228 (196, 1)**
10.0 /	29.45379 (151, 1)	44.84503 (151, 1)	52.15211 (151, 1)	52.80206 (151, 1)	49.99321 (151, 1)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

HIGH
24-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 71.23228 AND OCCURRED AT (1300.0, 20.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1700.0	2200.0	2900.0	3800.0	5000.0
360.0 /	60.07229 (197, 1)	55.55984 (197, 1)	46.57742 (197, 1)	36.50485 (197, 1)	27.14024 (197, 1)
350.0 /	59.43733 (181, 1)	54.16423 (181, 1)	45.10093 (181, 1)	35.22897 (181, 1)	26.14727 (181, 1)
340.0 /	39.92115 (169, 1)	38.27370 (169, 1)	33.80228 (261, 1)	29.87547 (261, 1)	24.58352 (261, 1)
330.0 /	26.11096 (197, 1)	22.96527 (197, 1)	19.28188 (70, 1)	15.83276 (70, 1)	13.90725C(222, 1)
320.0 /	26.02338 (230, 1)	26.21514 (230, 1)	23.76918 (230, 1)	19.80763 (230, 1)	15.50467 (230, 1)
310.0 /	20.84504 (172, 1)	21.14455 (273, 1)	19.54329 (273, 1)	16.50330 (273, 1)	14.38971 (217, 1)
300.0 /	17.00333 (179, 1)	15.01391 (319, 1)	12.99750 (319, 1)	11.01620 (221, 1)	9.51379 (281, 1)
290.0 /	15.31328 (179, 1)	13.99684 (179, 1)	11.60746 (179, 1)	10.16910 (248, 1)	9.44179 (248, 1)
280.0 /	16.72372 (127, 1)	12.59123 (345, 1)	10.91866 (345, 1)	8.82812 (97, 1)	9.25175 (97, 1)
270.0 /	15.67594 (290, 1)	13.08059 (290, 1)	11.59979 (242, 1)	10.30281 (242, 1)	8.76868 (242, 1)
260.0 /	20.08944 (308, 1)	17.02712 (308, 1)	12.78532 (308, 1)	8.94922 (308, 1)	6.70620 (300, 1)
250.0 /	19.15669C(71, 1)	17.84818C(71, 1)	15.00992C(71, 1)	12.36732 (288, 1)	10.19603 (288, 1)
240.0 /	28.68137 (293, 1)	23.41287 (293, 1)	20.89731 (61, 1)	22.29453 (61, 1)	21.91122 (61, 1)
230.0 /	28.76805 (18, 1)	25.96980 (9, 1)	24.09589 (61, 1)	22.42791 (61, 1)	19.16296 (61, 1)
220.0 /	24.48533 (51, 1)	21.84520 (309, 1)	20.23989 (263, 1)	17.83341 (263, 1)	14.56645 (263, 1)
210.0 /	28.12546 (263, 1)	28.21561 (263, 1)	25.34931 (263, 1)	20.89442 (263, 1)	16.15947 (263, 1)
200.0 /	26.21685 (253, 1)	23.26114 (164, 1)	20.39752 (164, 1)	17.10391 (164, 1)	13.66784 (164, 1)
190.0 /	25.22376 (94, 1)	24.92035 (94, 1)	22.06634 (94, 1)	17.93013 (94, 1)	13.79049 (96, 1)
180.0 /	27.58646 (95, 1)	28.75951 (95, 1)	27.32397 (95, 1)	23.99674 (95, 1)	19.71393 (95, 1)
170.0 /	28.09604 (191, 1)	26.16109 (191, 1)	21.90633 (191, 1)	17.11046 (191, 1)	12.68602 (191, 1)
160.0 /	24.58179 (193, 1)	20.81355 (265, 1)	18.93615 (265, 1)	15.54257 (265, 1)	11.88078 (265, 1)
150.0 /	68.24962 (330, 1)	61.78563 (330, 1)	50.71788 (330, 1)	39.08748 (330, 1)	28.64983 (330, 1)
140.0 /	59.70815 (93, 1)	52.56024 (93, 1)	42.06430 (93, 1)	32.74397 (73, 1)	25.62815 (73, 1)
130.0 /	35.95772 (31, 1)	38.40534 (31, 1)	36.99030 (31, 1)	32.80248 (31, 1)	27.15683 (31, 1)
120.0 /	29.44438 (93, 1)	26.27180 (93, 1)	21.31621 (93, 1)	16.31200 (93, 1)	11.90639 (93, 1)
110.0 /	13.99088 (262, 1)	11.38557 (192, 1)	13.09544 (347, 1)	15.38502 (357, 1)	15.84824 (357, 1)
100.0 /	17.68996 (150, 1)	12.37312 (150, 1)	10.28132 (357, 1)	11.29103 (357, 1)	11.08797 (357, 1)
90.0 /	18.93005 (274, 1)	16.82121 (274, 1)	13.98119 (334, 1)	15.42059 (334, 1)	15.16520 (334, 1)
80.0 /	10.63661 (281, 1)	12.89963 (281, 1)	14.39369 (281, 1)	15.09001 (281, 1)	14.50018 (281, 1)
70.0 /	18.99523 (225, 1)	19.25435 (225, 1)	21.15469C(63, 1)	21.58637C(63, 1)	20.27163C(63, 1)
60.0 /	17.28425 (234, 1)	17.12040 (338, 1)	16.40903 (338, 1)	16.06410 (292, 1)	15.15652 (292, 1)
50.0 /	30.39310 (195, 1)	24.86318 (141, 1)	21.48906 (15, 1)	23.16645 (15, 1)	22.52237 (15, 1)
40.0 /	31.91231 (195, 1)	27.41913 (195, 1)	22.12397 (195, 1)	17.46502 (77, 1)	16.34189 (245, 1)
30.0 /	51.70441 (196, 1)	42.42286 (196, 1)	32.23967 (196, 1)	23.52453 (196, 1)	17.51429 (204, 1)
20.0 /	65.94278 (196, 1)	56.44425 (196, 1)	44.54742 (196, 1)	33.52338 (196, 1)	24.20913 (196, 1)
10.0 /	45.04138 (86, 1)	43.62751 (241, 1)	39.65530 (241, 1)	33.23579 (241, 1)	26.10105 (241, 1)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 61.13067 AND OCCURRED AT (1300.0, 140.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 500.0	700.0	900.0	1100.0	1300.0
360.0 /	19.68907 (188, 1)	42.04620 (188, 1)	52.73218 (125, 1)	54.85126 (125, 1)	58.23609 (197, 1)
350.0 /	14.37100 (128, 1)	29.65636 (188, 1)	42.53397 (188, 1)	49.23311 (188, 1)	51.09750 (117, 1)
340.0 /	12.50563 (170, 1)	23.40926 (183, 1)	30.81049 (198, 1)	35.62434 (198, 1)	37.95060 (169, 1)
330.0 /	10.30354 (169, 1)	18.20208 (173, 1)	22.94074 (197, 1)	26.42086 (197, 1)	27.28848 (197, 1)
320.0 /	12.22000 (179, 1)	19.01191 (126, 1)	19.90388 (113, 1)	21.94216 (113, 1)	22.16928 (113, 1)
310.0 /	9.10536 (141, 1)	13.12341 (208, 1)	15.69115 (172, 1)	19.54932 (172, 1)	18.76799 (248, 1)
300.0 /	9.19057 (115, 1)	15.40639 (175, 1)	17.84418 (179, 1)	18.94117 (179, 1)	18.83709 (179, 1)
290.0 /	8.02914 (123, 1)	17.76443 (123, 1)	18.61237 (127, 1)	17.95291 (199, 1)	17.43395 (199, 1)
280.0 /	7.95145 (154, 1)	13.99037 (143, 1)	16.73948 (123, 1)	16.99012 (123, 1)	15.80707 (123, 1)
270.0 /	10.11977 (143, 1)	15.53213 (154, 1)	14.93849 (215, 1)	15.37143 (290, 1)	15.78127 (243, 1)
260.0 /	10.87582 (215, 1)	17.46621 (154, 1)	18.07512 (215, 1)	19.30546 (308, 1)	20.72993 (308, 1)
250.0 /	13.01954 (220, 1)	20.02282 (220, 1)	21.96542 (144, 1)	19.62736 (215, 1)	19.80643 (288, 1)
240.0 /	14.63785 (141, 1)	23.86555 (220, 1)	25.43100 (255, 1)	28.09075 (293, 1)	28.40211 (255, 1)
230.0 /	16.07513 (185, 1)	26.59401 (168, 1)	30.45129 (258, 1)	29.56064 (258, 1)	27.08839 (18, 1)
220.0 /	19.21127 (168, 1)	31.71540 (148, 1)	33.18087 (148, 1)	29.59336 (157, 1)	25.62470 (157, 1)
210.0 /	15.53533 (148, 1)	28.56395 (148, 1)	25.98469 (157, 1)	24.20659 (191, 1)	24.55450 (263, 1)
200.0 /	14.78374 (147, 1)	23.19897 (247, 1)	24.18290 (164, 1)	26.01769 (164, 1)	26.13930 (164, 1)
190.0 /	13.50369 (145, 1)	18.52797 (147, 1)	22.95965 (142, 1)	23.82853 (142, 1)	22.61412 (142, 1)
180.0 /	12.28339 (223, 1)	20.92060 (163, 1)	27.91004C(105, 1)	29.43352C(105, 1)	28.53354C(105, 1)
170.0 /	10.81724 (235, 1)	19.96125 (223, 1)	21.67487 (185, 1)	23.52360 (191, 1)	26.54015 (191, 1)
160.0 /	9.91001 (223, 1)	20.40434 (191, 1)	26.01785 (191, 1)	25.81761 (235, 1)	26.40819 (193, 1)
150.0 /	12.41497 (191, 1)	24.14993 (191, 1)	31.77684 (329, 1)	40.68677 (329, 1)	45.41853 (322, 1)
140.0 /	15.09327 (139, 1)	26.73907 (93, 1)	46.86400 (93, 1)	57.81584 (93, 1)	61.13067 (93, 1)
130.0 /	13.95726 (136, 1)	18.19595 (131, 1)	29.20890 (93, 1)	35.39396 (93, 1)	37.06158 (93, 1)
120.0 /	9.72628 (132, 1)	13.75402 (132, 1)	19.18817 (130, 1)	21.67114 (130, 1)	21.83700 (130, 1)
110.0 /	7.55250 (103, 1)	11.51844 (103, 1)	12.63757 (262, 1)	14.43646 (225, 1)	13.82688 (225, 1)
100.0 /	8.17951 (145, 1)	10.73713 (145, 1)	13.09734 (243, 1)	14.87920 (243, 1)	15.18022 (243, 1)
90.0 /	9.94351 (122, 1)	13.97586 (122, 1)	13.81515 (274, 1)	17.38978 (274, 1)	18.96041 (274, 1)
80.0 /	9.25919 (143, 1)	9.14999 (147, 1)	10.32207 (130, 1)	11.01304 (122, 1)	8.79915 (122, 1)
70.0 /	7.17945 (122, 1)	11.79910 (226, 1)	12.77329 (225, 1)	15.64344 (225, 1)	15.92638 (130, 1)
60.0 /	10.94549 (226, 1)	20.60570 (130, 1)	18.46111 (226, 1)	17.08791 (234, 1)	17.76719 (234, 1)
50.0 /	18.56078 (120, 1)	24.71631 (120, 1)	24.92750 (120, 1)	23.37334 (141, 1)	25.61920 (141, 1)
40.0 /	16.37912 (195, 1)	27.64872 (195, 1)	33.78455 (195, 1)	35.73408 (195, 1)	35.10015 (195, 1)
30.0 /	15.34237 (151, 1)	28.89368 (162, 1)	39.39967 (162, 1)	42.82666 (162, 1)	42.10883 (162, 1)
20.0 /	21.34978 (196, 1)	35.92879 (151, 1)	39.55265 (151, 1)	41.45766 (120, 1)	44.25811 (120, 1)
10.0 /	18.99603 (162, 1)	33.41911 (152, 1)	44.35168 (152, 1)	48.05615 (152, 1)	47.24284 (152, 1)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 61.13067 AND OCCURRED AT (1300.0, 140.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1700.0	2200.0	2900.0	3800.0	5000.0
360.0 /	59.01674 (188, 1)	50.94363 (188, 1)	40.68444 (188, 1)	32.05412 (76, 1)	24.59206 (76, 1)
350.0 /	51.14470 (117, 1)	47.23138 (117, 1)	40.33762 (117, 1)	32.44090 (117, 1)	25.57654 (171, 1)
340.0 /	36.46970 (189, 1)	34.83543 (261, 1)	33.70498 (169, 1)	27.96299 (169, 1)	22.03384 (169, 1)
330.0 /	24.71966 (171, 1)	21.83847 (337, 1)	18.82731 (337, 1)	15.70849C(222, 1)	12.16120 (70, 1)
320.0 /	21.59547 (60, 1)	20.56013 (60, 1)	18.55891 (58, 1)	16.08226 (58, 1)	13.21840 (113, 1)
310.0 /	20.49300 (273, 1)	18.60016 (172, 1)	15.09629 (172, 1)	13.55110 (217, 1)	13.04604 (273, 1)
300.0 /	15.58803 (199, 1)	13.95331 (179, 1)	12.98175 (221, 1)	9.96285 (319, 1)	9.15760 (272, 1)
290.0 /	14.71733 (123, 1)	10.91758 (199, 1)	10.33919 (248, 1)	8.98149 (179, 1)	8.80096 (347, 1)
280.0 /	12.[illegible]076 (345, 1)	12.47969 (127, 1)	10.45374 (82, 1)	8.82399C(25, 1)	7.07502C(25, 1)
270.0 /	15.00834C(65, 1)	12.72485 (242, 1)	9.59188 (290, 1)	7.83688 (351, 1)	6.88383 (61, 1)
260.0 /	19.33132 (92, 1)	14.70921 (92, 1)	10.44855 (354, 1)	7.90019 (354, 1)	6.38642 (273, 1)
250.0 /	18.55386 (288, 1)	16.62295 (288, 1)	14.52015 (288, 1)	11.68606C(71, 1)	10.01415 (230, 1)
240.0 /	24.64212 (255, 1)	19.62844 (221, 1)	17.57777 (221, 1)	15.57368 (79, 1)	13.95271 (230, 1)
230.0 /	26.46140 (9, 1)	25.73478 (18, 1)	23.68719 (9, 1)	20.73196 (9, 1)	17.70333 (9, 1)
220.0 /	22.64172 (283, 1)	21.16063 (51, 1)	20.06368 (309, 1)	16.54980 (309, 1)	12.62170 (309, 1)
210.0 /	22.76650 (132, 1)	19.32101 (132, 1)	15.25426 (132, 1)	11.61732 (132, 1)	10.48075 (231, 1)
200.0 /	25.16665 (164, 1)	21.19016 (253, 1)	17.40249 (298, 1)	14.36740 (298, 1)	11.79829 (263, 1)
190.0 /	22.35911 (68, 1)	18.74898 (156, 1)	16.91607 (96, 1)	15.79074 (96, 1)	13.65321 (94, 1)
180.0 /	24.72084 (163, 1)	19.87340 (263, 1)	17.94323 (74, 1)	16.40663 (74, 1)	13.87598 (74, 1)
170.0 /	22.01284 (235, 1)	16.96697 (51, 1)	15.06364 (51, 1)	12.31850 (51, 1)	9.47850 (51, 1)
160.0 /	22.81055 (346, 1)	20.80417 (193, 1)	16.30486 (346, 1)	12.38743 (346, 1)	9.68943 (156, 1)
150.0 /	48.30882 (322, 1)	45.53621 (322, 1)	38.64420 (322, 1)	30.46323 (322, 1)	22.68899 (322, 1)
140.0 /	53.52675 (136, 1)	47.29251 (50, 1)	40.37550 (50, 1)	32.12024 (50, 1)	24.18771 (50, 1)
130.0 /	35.82005 (93, 1)	33.02705 (50, 1)	28.80340 (50, 1)	23.25255 (50, 1)	17.69271 (50, 1)
120.0 /	20.20150 (130, 1)	17.19959 (130, 1)	14.39273 (30, 1)	13.25198 (30, 1)	11.26961 (30, 1)
110.0 /	13.07617 (149, 1)	11.27426 (103, 1)	13.04706 (357, 1)	14.57027 (347, 1)	14.84333 (347, 1)
100.0 /	13.69379 (243, 1)	10.97227 (243, 1)	8.17384 (8, 1)	9.37688 (22, 1)	9.60174 (22, 1)
[illegible].0 /	16.89245 (150, 1)	12.43679 (150, 1)	13.62656 (274, 1)	13.75996 (212, 1)	14.91622 (212, 1)
80.0 /	10.30537 (130, 1)	11.58725 (357, 1)	13.85472 (357, 1)	14.39424 (357, 1)	13.38217 (357, 1)
70.0 /	16.11387C(63, 1)	19.20070C(63, 1)	18.11547 (225, 1)	15.77103 (225, 1)	14.02505 (18, 1)
60.0 /	16.23573 (338, 1)	15.72646 (234, 1)	15.71239 (292, 1)	14.60826 (338, 1)	14.54425 (43, 1)
50.0 /	26.72047 (141, 1)	24.69298 (195, 1)	20.86691 (141, 1)	16.35929 (141, 1)	15.92928 (41, 1)
40.0 /	31.46389 (108, 1)	26.00108 (108, 1)	20.40510 (77, 1)	17.12774 (195, 1)	14.02687 (77, 1)
30.0 /	37.54066 (162, 1)	31.03105 (162, 1)	23.70515 (162, 1)	19.99756 (204, 1)	16.52918 (196, 1)
20.0 /	44.00215 (120, 1)	39.43988 (120, 1)	32.16943 (120, 1)	25.28861 (316, 1)	18.90729 (76, 1)
10.0 /	43.72375 (316, 1)	43.16281 (86, 1)	37.29421 (86, 1)	29.87026 (86, 1)	22.57555 (86, 1)

TABLE 8.5.6 ISCST EXAMPLE -- OUTPUT (cont.)

MAX 50
24-HR
SGROUP# 1

*** REFINED EXAMPLE ***

* 50 MAXIMUM 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *

RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	71.23228	1	196	1300.0	20.0	26	56.44425	1	196	2200.0	20.0
2	70.89441	1	196	1100.0	20.0	27	55.92572	1	181	1100.0	350.0
3	68.24962	1	330	1700.0	150.0	28	55.55984	1	197	2200.0	360.0
4	67.62091	1	330	1300.0	150.0	29	54.85126	1	125	1100.0	360.0
5	67.45006	1	136	1100.0	140.0	30	54.50301	1	136	700.0	140.0
6	66.25354	1	136	900.0	140.0	31	54.42657	1	152	1300.0	360.0
7	65.94278	1	196	1700.0	20.0	32	54.16423	1	181	2200.0	350.0
8	63.65774	1	196	900.0	20.0	33	53.52675	1	136	1700.0	140.0
9	63.61967	1	136	1300.0	140.0	34	53.27883	1	197	1100.0	360.0
10	63.42328	1	188	1300.0	360.0	35	53.08819	1	152	1100.0	360.0
11	62.94138	1	188	1100.0	360.0	36	52.85453	1	125	1300.0	360.0
12	62.59972	1	330	1100.0	150.0	37	52.80206	1	151	1100.0	10.0
13	61.78563	1	330	2200.0	150.0	38	52.73218	1	125	900.0	360.0
14	61.13067	1	93	1300.0	140.0	39	52.56024	1	93	2200.0	140.0
15	60.70372	1	196	1100.0	30.0	40	52.41252	1	152	1700.0	360.0
16	60.07229	1	197	1700.0	360.0	41	52.15211	1	151	900.0	10.0
17	59.70815	1	93	1700.0	140.0	42	51.70441	1	196	1700.0	30.0
18	59.43733	1	181	1700.0	350.0	43	51.14470	1	117	1700.0	350.0
19	59.38997	1	181	1300.0	350.0	44	51.09750	1	117	1300.0	350.0
20	59.01674	1	188	1700.0	360.0	45	51.05812	1	188	1300.0	350.0
21	58.83536	1	196	1300.0	30.0	46	50.94363	1	188	2200.0	360.0
22	58.23609	1	197	1300.0	360.0	47	50.71788	1	330	2900.0	150.0
23	57.81584	1	93	1100.0	140.0	48	50.18162	1	50	1700.0	140.0
24	57.49986	1	196	900.0	30.0	49	49.99321	1	151	1300.0	10.0
25	56.71916	1	188	900.0	360.0	50	49.94573	1	114	1700.0	360.0

TABLE 8.5.7 ISCLT EXAMPLE -- INPUT DATA

```
ISCLT CLASS EXAMPLE LESSON 8.5
 1 2 2 0 0 3 2 2 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 1
   1    0  10  36    0    0    0    0    0

      500.      700.      900.      1100.      1300.      1700.      2200.      2900.
     3800.     5000.
       10.       10.
(7X,6F7.0)
    N A  .00014 .00080 .00000 .00000 .00000 .00000
  NNE A  .00002 .00080 .00000 .00000 .00000 .00000
   NE A  .00002 .00091 .00000 .00000 .00000 .00000
  ENE A  .00002 .00057 .00000 .00000 .00000 .00000
    E A  .00001 .00034 .00000 .00000 .00000 .00000
  ESE A  .00013 .00034 .00000 .00000 .00000 .00000
   SE A  .00013 .00034 .00000 .00000 .00000 .00000
  SSE A  .00013 .00034 .00000 .00000 .00000 .00000
    S A  .00025 .00046 .00000 .00000 .00000 .00000
  SSW A  .00013 .00057 .00000 .00000 .00000 .00000
   SW A  .00012 .00023 .00000 .00000 .00000 .00000
  WSW A  .00012 .00011 .00000 .00000 .00000 .00000
    W A  .00013 .00046 .00000 .00000 .00000 .00000
  WNW A  .00024 .00023 .00000 .00000 .00000 .00000
   NW A  .00001 .00034 .00000 .00000 .00000 .00000
  NNW A  .00001 .00023 .00000 .00000 .00000 .00000
Note: Stability classes B through E omitted from table
    N F  .00119 .00171 .00000 .00000 .00000 .00000
  NNE F  .00059 .00046 .00000 .00000 .00000 .00000
   NE F  .00083 .00137 .00000 .00000 .00000 .00000
  ENE F  .00083 .00126 .00000 .00000 .00000 .00000
    E F  .00084 .00160 .00000 .00000 .00000 .00000
  ESE F  .00106 .00114 .00000 .00000 .00000 .00000
   SE F  .00119 .00171 .00000 .00000 .00000 .00000
  SSE F  .00097 .00251 .00000 .00000 .00000 .00000
    S F  .00212 .00993 .00000 .00000 .00000 .00000
  SSW F  .00139 .00765 .00000 .00000 .00000 .00000
   SW F  .00175 .01564 .00000 .00000 .00000 .00000
  WSW F  .00223 .01678 .00000 .00000 .00000 .00000
    W F  .00254 .01461 .00000 .00000 .00000 .00000
  WNW F  .00146 .00479 .00000 .00000 .00000 .00000
   NW F  .00130 .00183 .00000 .00000 .00000 .00000
  NNW F  .00062 .00240 .00000 .00000 .00000 .00000
     302.9     298.3     295.7     292.5     289.4     286.6
    2704.9    2924.5
    1409.0    2346.9    3064.2
    1070.1    1510.2    2735.2    3392.6    3466.7    3363.0
     683.7    1093.5    2082.5    3220.7    2979.0    2805.4
        .0    1791.7    2819.8
    2094.0    2478.4
Note: 17 blank lines have been removed.
     1000        0.        0.   35.0     0.  432.0   11.7    2.4
     100.0
```

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (Partial Printout)

```
                    ISCLT (DATED 86324)
                    AN AIR QUALITY DISPERSION MODEL IN
                    SECTION 1.  GUIDELINE MODELS
                    IN UNAMAP (VERSION 6) JULY 86. REV. DEC 86
**** ISCLT ************** ISCLT CLASS EXAMPLE LESSON 8.5                                              ********* PAGE      1 ****

                                    - ISCLT INPUT DATA -

          NUMBER OF SOURCES =    1
          NUMBER OF X AXIS GRID SYSTEM POINTS =   10
          NUMBER OF Y AXIS GRID SYSTEM POINTS =   36
          NUMBER OF SPECIAL POINTS =    0
          NUMBER OF SEASONS =    1
          NUMBER OF WIND SPEED CLASSES =   6
          NUMBER OF STABILITY CLASSES =   6
          NUMBER OF WIND DIRECTION CLASSES =  16
          FILE NUMBER OF DATA FILE USED FOR REPORTS =   1
          THE PROGRAM IS RUN IN RURAL MODE
          CONCENTRATION (DEPOSITION) UNITS CONVERSION FACTOR =0.10000000E+07
          ACCELERATION OF GRAVITY (METERS/SEC**2) =  9.800
          HEIGHT OF MEASUREMENT OF WIND SPEED (METERS) =  10.000
          CORRECTION ANGLE FOR GRID SYSTEM VERSUS DIRECTION DATA NORTH (DEGREES) =   0.000
          DECAY COEFFICIENT =0.00000000E+00
          PROGRAM OPTION SWITCHES = 1, 2, 2, 0, 0, 3, 2, 2, 3, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1,
          ALL SOURCES ARE USED TO FORM SOURCE COMBINATION  1
            RANGE X AXIS GRID SYSTEM POINTS (METERS )=    500.00,     700.00,     900.00,    1100.00,    1300.00,    1700.00,
             2200.00,    2900.00,    3800.00,    5000.00,
      AZIMUTH BEARING Y AXIS GRID SYSTEM POINTS (DEGREES)=     10.00,      20.00,      30.00,      40.00,      50.00,      60.00,
               70.00,      80.00,      90.00,     100.00,     110.00,     120.00,     130.00,     140.00,     150.00,     160.00,
              170.00,     180.00,     190.00,     200.00,     210.00,     220.00,     230.00,     240.00,     250.00,     260.00,
              270.00,     280.00,     290.00,     300.00,     310.00,     320.00,     330.00,     340.00,     350.00,     360.00,

                         - AMBIENT AIR TEMPERATURE (DEGREES KELVIN) -

                    STABILITY  STABILITY  STABILITY  STABILITY  STABILITY  STABILITY
                    CATEGORY 1 CATEGORY 2 CATEGORY 3 CATEGORY 4 CATEGORY 5 CATEGORY 6
          SEASON  1   302.9000   298.3000   295.7000   292.5000   289.4000   286.6000

                                - MIXING LAYER HEIGHT (METERS) -

                                          SEASON 1
                     WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED
                     CATEGORY 1  CATEGORY 2  CATEGORY 3  CATEGORY 4  CATEGORY 5  CATEGORY 6
      STABILITY CATEGORY 10.270490E+040.292450E+040.292450E+040.292450E+040.292450E+040.292450E+04
      STABILITY CATEGORY 20.140900E+040.234690E+040.306420E+040.306420E+040.306420E+040.306420E+04
      STABILITY CATEGORY 30.107010E+040.151020E+040.273520E+040.339260E+040.346670E+040.336300E+04
      STABILITY CATEGORY 40.683700E+030.109350E+040.208250E+040.322070E+040.297900E+040.280540E+04
      STABILITY CATEGORY 50.100000E+050.100000E+050.100000E+050.100000E+050.100000E+050.100000E+05
      STABILITY CATEGORY 60.100000E+050.100000E+050.100000E+050.100000E+050.100000E+050.100000E+05
```

- ISCLT INPUT DATA (CONT.) -

- FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY -

SEASON 1

STABILITY CATEGORY 1

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.5000MPS)	WIND SPEED CATEGORY 2 (2.5000MPS)	WIND SPEED CATEGORY 3 (4.3000MPS)	WIND SPEED CATEGORY 4 (6.8000MPS)	WIND SPEED CATEGORY 5 (9.5000MPS)	WIND SPEED CATEGORY 6 (12.5000MPS)
0.000	0.00014000	0.00079999	0.00000000	0.00000000	0.00000000	0.00000000
22.500	0.00002000	0.00079999	0.00000000	0.00000000	0.00000000	0.00000000
45.000	0.00002000	0.00090999	0.00000000	0.00000000	0.00000000	0.00000000
67.500	0.00002000	0.00056999	0.00000000	0.00000000	0.00000000	0.00000000
90.000	0.00001000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
112.500	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
135.000	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
157.500	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
180.000	0.00025000	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000
202.500	0.00013000	0.00056999	0.00000000	0.00000000	0.00000000	0.00000000
225.000	0.00012000	0.00023000	0.00000000	0.00000000	0.00000000	0.00000000
247.500	0.00012000	0.00011000	0.00000000	0.00000000	0.00000000	0.00000000
270.000	0.00013000	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000
292.500	0.00024000	0.00023000	0.00000000	0.00000000	0.00000000	0.00000000
315.000	0.00001000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
337.500	0.00001000	0.00023000	0.00000000	0.00000000	0.00000000	0.00000000

SEASON 1

STABILITY CATEGORY 6

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.5000MPS)	WIND SPEED CATEGORY 2 (2.5000MPS)	WIND SPEED CATEGORY 3 (4.3000MPS)	WIND SPEED CATEGORY 4 (6.8000MPS)	WIND SPEED CATEGORY 5 (9.5000MPS)	WIND SPEED CATEGORY 6 (12.5000MPS)
0.000	0.00118999	0.00170998	0.00000000	0.00000000	0.00000000	0.00000000
22.500	0.00058999	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000
45.000	0.00082999	0.00136999	0.00000000	0.00000000	0.00000000	0.00000000
67.500	0.00082999	0.00125999	0.00000000	0.00000000	0.00000000	0.00000000
90.000	0.00083999	0.00159998	0.00000000	0.00000000	0.00000000	0.00000000
112.500	0.00105999	0.00113999	0.00000000	0.00000000	0.00000000	0.00000000
135.000	0.00118999	0.00170998	0.00000000	0.00000000	0.00000000	0.00000000
157.500	0.00096999	0.00250997	0.00000000	0.00000000	0.00000000	0.00000000
180.000	0.00211998	0.00992990	0.00000000	0.00000000	0.00000000	0.00000000
202.500	0.00138999	0.00764992	0.00000000	0.00000000	0.00000000	0.00000000
225.000	0.00174998	0.01563984	0.00000000	0.00000000	0.00000000	0.00000000
247.500	0.00222998	0.01677983	0.00000000	0.00000000	0.00000000	0.00000000
270.000	0.00253997	0.01460985	0.00000000	0.00000000	0.00000000	0.00000000
292.500	0.00145999	0.00478995	0.00000000	0.00000000	0.00000000	0.00000000
315.000	0.00129999	0.00182998	0.00000000	0.00000000	0.00000000	0.00000000
337.500	0.00061999	0.00239998	0.00000000	0.00000000	0.00000000	0.00000000

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

```
**** ISCLT ************* ISCLT CLASS EXAMPLE LESSON 8.5                                        ******** PAGE      5 ****

                                    - ISCLT INPUT DATA (CONT.) -

                      - VERTICAL POTENTIAL TEMPERATURE GRADIENT (DEGREES KELVIN/METER) -

                       WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED
                       CATEGORY 1  CATEGORY 2  CATEGORY 3  CATEGORY 4  CATEGORY 5  CATEGORY 6
STABILITY CATEGORY 10.000000E+000.000000E+000.000000E+000.000000E+000.000000E+000.000000E+00
STABILITY CATEGORY 20.000000E+000.000000E+000.000000E+000.000000E+000.000000E+000.000000E+00
STABILITY CATEGORY 30.000000E+000.000000E+000.000000E+000.000000E+000.000000E+000.000000E+00
STABILITY CATEGORY 40.000000E+000.000000E+000.000000E+000.000000E+000.000000E+000.000000E+00
STABILITY CATEGORY 50.200000E-010.200000E-010.200000E-010.200000E-010.200000E-010.200000E-01
STABILITY CATEGORY 60.350000E-010.350000E-010.350000E-010.350000E-010.350000E-010.350000E-01

                              - WIND PROFILE POWER LAW EXPONENTS -

                       WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED
                       CATEGORY 1  CATEGORY 2  CATEGORY 3  CATEGORY 4  CATEGORY 5  CATEGORY 6
STABILITY CATEGORY 10.700000E-010.700000E-010.700000E-010.700000E-010.700000E-010.700000E-01
STABILITY CATEGORY 20.700000E-010.700000E-010.700000E-010.700000E-010.700000E-010.700000E-01
STABILITY CATEGORY 30.100000E+000.100000E+000.100000E+000.100000E+000.100000E+000.100000E+00
STABILITY CATEGORY 40.150000E+000.150000E+000.150000E+000.150000E+000.150000E+000.150000E+00
STABILITY CATEGORY 50.350000E+000.350000E+000.350000E+000.350000E+000.350000E+000.350000E+00
STABILITY CATEGORY 60.550000E+000.550000E+000.550000E+000.550000E+000.550000E+000.550000E+00
```



```
**** ISCLT ************* ISCLT CLASS EXAMPLE LESSON 8.5                                        ******** PAGE      6 ****

                                        - SOURCE INPUT DATA -

C T SOURCE SOURCE     X          Y      EMISSION  BASE /
A A NUMBER  TYPE  COORDINATE  COORDINATE  HEIGHT  ELEV- /               - SOURCE DETAILS DEPENDING ON TYPE -
R P                  (M)         (M)        (M)   ATION /
D E                                                (M)  /
----------------------------------------------------------------------------------------------------------------------
X         1  STACK       0.00        0.00  35.00    0.00 GAS EXIT TEMP (DEG K)= 432.00, GAS EXIT VEL. (M/SEC)= 11.70,
                                                         STACK DIAMETER (M)= 2.400, HEIGHT OF ASSO. BLDG. (M)=  0.00, WIDTH OF
                                                         ASSO. BLDG. (M)=   0.00, WAKE EFFECTS FLAG = 0
                                                               - SOURCE STRENGTHS ( GRAMS PER SEC                        ) -
                                                                    SEASON 1     SEASON 2     SEASON 3     SEASON 4
                                                                   1.00000E+02
```

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -
- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	500.000	700.000	900.000	1100.000	1300.000	1700.000	2200.000	2900.000	3800.000
	- CONCENTRATION -								
360.000	1.662817	4.285791	6.452370	7.888812	8.586329	9.033677	8.722522	7.795433	6.578213
350.000	1.1286[illegible]	[illegible]974489	4.459962	5.490659	5.994116	6.332581	6.136479	5.500951	4.653829
340.000	0.748141	[illegible]312	2.727975	3.316571	3.605739	3.788730	3.657539	3.270279	2.761788
330.000	0.586717	[illegible]472	2.031303	2.433469	2.633770	2.748710	2.633528	2.335348	1.957759
320.000	0.510171	1.202780	1.652561	1.958551	2.111520	2.188282	2.075995	1.818749	1.507998
310.000	0.464088	1.066915	1.432582	1.667461	1.780554	1.813397	1.688049	1.450088	1.182632
300.000	0.417829	0.978324	1.299994	1.494668	1.576515	1.567396	1.426328	1.200910	0.966083
290.000	0.435687	1.008078	1.327381	1.501785	1.561566	1.508641	1.334944	1.094989	0.863055
280.000	0.526283	1.265295	1.686128	1.910016	1.983104	1.910705	1.688639	1.381542	1.082077
270.000	0.694699	1.607898	2.130357	2.390321	2.462570	2.347407	2.059711	1.674805	1.302441
260.000	0.863811	2.015319	2.636712	2.937740	3.010345	2.844923	2.476013	2.000942	1.553154
250.000	1.188820	2.588021	3.299743	3.611623	3.655611	3.396770	2.917402	2.335209	1.803726
240.000	1.234033	2.749441	3.516777	3.863118	3.918648	3.647624	3.131143	2.499489	1.923256
230.000	1.348032	2.935056	3.735078	4.092554	4.143608	3.844352	3.287305	2.610435	1.996101
220.000	1.307853	2.838662	3.614855	3.964234	4.012937	3.715661	3.166584	2.503494	1.905361
210.000	1.087919	2.433819	3.135074	3.460321	3.510733	3.248872	2.759910	2.172752	1.647727
200.000	1.024732	2.256237	2.916028	3.225062	3.273696	3.030148	2.575101	2.029592	1.541552
190.000	1.013207	2.349631	3.105765	3.506948	3.622673	3.456949	3.024613	2.451175	1.903426
180.000	1.158577	2.611089	3.461918	3.923571	4.075401	3.940165	3.498815	2.879295	2.263509
170.000	0.836320	2.061746	2.841634	3.291698	3.453029	3.379115	3.025246	2.503774	1.977673
160.000	0.636486	1.665795	2.386143	2.795412	2.941581	2.886965	2.587983	2.143112	1.695278
150.000	0.580209	1.571068	2.306901	2.748144	2.912156	2.891336	2.620351	2.191599	1.746386
140.000	0.624771	1.664780	2.458709	2.933302	3.114107	3.109501	2.837763	2.390088	1.913534
130.000	0.583309	1.545824	2.273238	2.711504	2.887244	2.903984	2.674468	2.278972	1.848676
120.000	0.427729	1.168265	1.699827	2.048234	2.207921	2.267133	2.133462	1.867503	1.562150
110.000	0.366315	0.952261	1.334484	1.590318	1.726642	1.810312	1.756662	1.605263	1.411203
100.000	0.363728	0.879799	1.199036	1.435601	1.582574	1.740410	1.804717	1.783812	1.688740
90.000	0.421337	0.878794	1.145402	1.358267	1.511271	1.732314	1.902088	2.001803	1.995161
80.000	0.336991	0.793048	1.095349	1.352377	1.540957	1.827635	2.057343	2.193804	2.199172
70.000	0.303404	0.768772	1.123834	1.428020	1.658206	2.017491	2.302660	2.467457	2.467211
60.000	0.343729	0.888049	1.321713	1.682397	1.928772	2.285322	2.544247	2.665032	2.620831
50.000	0.458135	1.131299	1.675187	2.086970	2.341228	2.666216	2.859727	2.899250	2.781647
40.000	0.578190	1.426134	2.112732	2.615076	2.891279	3.189831	3.296888	3.212985	2.975637
30.000	0.771489	1.873960	2.753447	3.353119	3.647033	3.887736	3.857539	3.587070	3.177471
20.000	0.992120	2.422077	3.568806	4.331517	4.687885	4.925981	4.783383	4.323486	3.710252
10.000	1.240828	3.227766	4.856959	5.981202	6.519034	6.887225	6.688512	6.019246	5.122007

- GRID SYSTEM RECEPTORS -
- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	5000.000
	- CONCENTRATION -
360.000	5.284467
350.000	3.746109

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED (CONT.) **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	5000.000 - CONCENTRATION -
340.000	2.219648
330.000	1.564782
320.000	1.196541
310.000	0.927410
300.000	0.751166
290.000	0.660579
280.000	0.818904
270.000	0.976518
260.000	1.166365
250.000	1.353103
240.000	1.436406
230.000	1.480586
220.000	1.406519
210.000	1.212478
200.000	1.136072
190.000	1.427346
180.000	1.714029
170.000	1.504821
160.000	1.294066
150.000	1.339498
140.000	1.470649
130.000	1.440867
120.000	1.258942
110.000	1.197001
100.000	1.524024
90.000	1.870260
80.000	2.062479
70.000	2.298158
60.000	2.412589
50.000	2.515064
40.000	2.613362
30.000	2.684602
20.000	3.037494
10.000	4.151242

*** END OF ISCLT PROGRAM, 1 SOURCES PROCESSED ***

TABLE 8.5.7 ISCLT EXAMPLE -- INPUT DATA

```
ISCLT CLASS EXAMPLE LESSON 8.5
 1 2 2 0 0 3 2 2 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 1
   1    0   10   36    0    0    0    0    0

      500.      700.      900.     1100.     1300.     1700.     2200.     2900.
     3800.     5000.
       10.       10.
(7X,6F7.0)
   N A  .00014 .00080 .00000 .00000 .00000 .00000
 NNE A  .00002 .00080 .00000 .00000 .00000 .00000
  NE A  .00002 .00091 .00000 .00000 .00000 .00000
 ENE A  .00002 .00057 .00000 .00000 .00000 .00000
   E A  .00001 .00034 .00000 .00000 .00000 .00000
 ESE A  .00013 .00034 .00000 .00000 .00000 .00000
  SE A  .00013 .00034 .00000 .00000 .00000 .00000
 SSE A  .00013 .00034 .00000 .00000 .00000 .00000
   S A  .00025 .00046 .00000 .00000 .00000 .00000
 SSW A  .00013 .00057 .00000 .00000 .00000 .00000
  SW A  .00012 .00023 .00000 .00000 .00000 .00000
 WSW A  .00012 .00011 .00000 .00000 .00000 .00000
   W A  .00013 .00046 .00000 .00000 .00000 .00000
 WNW A  .00024 .00023 .00000 .00000 .00000 .00000
  NW A  .00001 .00034 .00000 .00000 .00000 .00000
 NNW A  .00001 .00023 .00000 .00000 .00000 .00000
Note: Stability classes B through E omitted from table
   N F  .00119 .00171 .00000 .00000 .00000 .00000
 NNE F  .00059 .00046 .00000 .00000 .00000 .00000
  NE F  .00083 .00137 .00000 .00000 .00000 .00000
 ENE F  .00083 .00126 .00000 .00000 .00000 .00000
   E F  .00084 .00160 .00000 .00000 .00000 .00000
 ESE F  .00106 .00114 .00000 .00000 .00000 .00000
  SE F  .00119 .00171 .00000 .00000 .00000 .00000
 SSE F  .00097 .00251 .00000 .00000 .00000 .00000
   S F  .00212 .00993 .00000 .00000 .00000 .00000
 SSW F  .00139 .00765 .00000 .00000 .00000 .00000
  SW F  .00175 .01564 .00000 .00000 .00000 .00000
 WSW F  .00223 .01678 .00000 .00000 .00000 .00000
   W F  .00254 .01461 .00000 .00000 .00000 .00000
 WNW F  .00146 .00479 .00000 .00000 .00000 .00000
  NW F  .00130 .00183 .00000 .00000 .00000 .00000
 NNW F  .00062 .00240 .00000 .00000 .00000 .00000
     302.9     298.3     295.7     292.5     289.4     286.6
    2704.9    2924.5
    1409.0    2346.9    3064.2
    1070.1    1510.2    2735.2    3392.6    3466.7    3363.0
     683.7    1093.5    2082.5    3220.7    2979.0    2805.4
        .0    1791.7    2819.8
    2094.0    2478.4
Note: 17 blank lines have been removed.
     1000         0.        0.   35.0      0.  432.0    11.7    2.4
     100.0
```

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (Partial Printout)

```
                    ISCLT (DATED 86324)
                    AN AIR QUALITY DISPERSION MODEL IN
                    SECTION 1.  GUIDELINE MODELS
                    IN UNAMAP (VERSION 6) JULY 86. REV. DEC 86
**** ISCLT ************** ISCLT CLASS EXAMPLE LESSON 8.5                                              ********* PAGE      1 ****

                                          - ISCLT INPUT DATA -

          NUMBER OF SOURCES =    1
          NUMBER OF X AXIS GRID SYSTEM POINTS =   10
          NUMBER OF Y AXIS GRID SYSTEM POINTS =   36
          NUMBER OF SPECIAL POINTS =    0
          NUMBER OF SEASONS =    1
          NUMBER OF WIND SPEED CLASSES =   6
          NUMBER OF STABILITY CLASSES =   6
          NUMBER OF WIND DIRECTION CLASSES =  16
          FILE NUMBER OF DATA FILE USED FOR REPORTS =   1
          THE PROGRAM IS RUN IN RURAL MODE
          CONCENTRATION (DEPOSITION) UNITS CONVERSION FACTOR =0.10000000E+07
          ACCELERATION OF GRAVITY (METERS/SEC**2) =  9.800
          HEIGHT OF MEASUREMENT OF WIND SPEED (METERS) =  10.000
          CORRECTION ANGLE FOR GRID SYSTEM VERSUS DIRECTION DATA NORTH (DEGREES) =   0.000
          DECAY COEFFICIENT =0.00000000E+00
          PROGRAM OPTION SWITCHES = 1, 2, 2, 0, 0, 3, 2, 2, 3, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1,
          ALL SOURCES ARE USED TO FORM SOURCE COMBINATION  1
            RANGE X AXIS GRID SYSTEM POINTS (METERS )=     500.00,     700.00,     900.00,    1100.00,    1300.00,    1700.00,
              2200.00,    2900.00,    3800.00,    5000.00,
  AZIMUTH BEARING Y AXIS GRID SYSTEM POINTS (DEGREES)=      10.00,      20.00,      30.00,      40.00,      50.00,      60.00,
                70.00,      80.00,      90.00,     100.00,     110.00,     120.00,     130.00,     140.00,     150.00,     160.00,
               170.00,     180.00,     190.00,     200.00,     210.00,     220.00,     230.00,     240.00,     250.00,     260.00,
               270.00,     280.00,     290.00,     300.00,     310.00,     320.00,     330.00,     340.00,     350.00,     360.00,
```

- AMBIENT AIR TEMPERATURE (DEGREES KELVIN) -

	STABILITY CATEGORY 1	STABILITY CATEGORY 2	STABILITY CATEGORY 3	STABILITY CATEGORY 4	STABILITY CATEGORY 5	STABILITY CATEGORY 6
SEASON 1	302.9000	298.3000	295.7000	292.5000	289.4000	286.6000

- MIXING LAYER HEIGHT (METERS) -

SEASON 1

	WIND SPEED CATEGORY 1	WIND SPEED CATEGORY 2	WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4	WIND SPEED CATEGORY 5	WIND SPEED CATEGORY 6
STABILITY CATEGORY 1	0.270490E+04	0.292450E+04	0.292450E+04	0.292450E+04	0.292450E+04	0.292450E+04
STABILITY CATEGORY 2	0.140900E+04	0.234690E+04	0.306420E+04	0.306420E+04	0.306420E+04	0.306420E+04
STABILITY CATEGORY 3	0.107010E+04	0.151020E+04	0.273520E+04	0.339260E+04	0.346670E+04	0.336300E+04
STABILITY CATEGORY 4	0.683700E+03	0.109350E+04	0.208250E+04	0.322070E+04	0.297900E+04	0.280540E+04
STABILITY CATEGORY 5	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05
STABILITY CATEGORY 6	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

- ISCLT INPUT DATA (CONT.) -

- FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY -

SEASON 1

STABILITY CATEGORY 1

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.5000MPS)	WIND SPEED CATEGORY 2 (2.5000MPS)	WIND SPEED CATEGORY 3 (4.3000MPS)	WIND SPEED CATEGORY 4 (6.8000MPS)	WIND SPEED CATEGORY 5 (9.5000MPS)	WIND SPEED CATEGORY 6 (12.5000MPS)
0.000	0.00014000	0.00079999	0.00000000	0.00000000	0.00000000	0.00000000
22.500	0.00002000	0.00079999	0.00000000	0.00000000	0.00000000	0.00000000
45.000	0.00002000	0.00090999	0.00000000	0.00000000	0.00000000	0.00000000
67.500	0.00002000	0.00056999	0.00000000	0.00000000	0.00000000	0.00000000
90.000	0.00001000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
112.500	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
135.000	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
157.500	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
180.000	0.00025000	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000
202.500	0.00013000	0.00056999	0.00000000	0.00000000	0.00000000	0.00000000
225.000	0.00012000	0.00023000	0.00000000	0.00000000	0.00000000	0.00000000
247.500	0.00012000	0.00011000	0.00000000	0.00000000	0.00000000	0.00000000
270.000	0.00013000	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000
292.500	0.00024000	0.00023000	0.00000000	0.00000000	0.00000000	0.00000000
315.000	0.00001000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
337.500	0.00001000	0.00023000	0.00000000	0.00000000	0.00000000	0.00000000

SEASON 1

STABILITY CATEGORY 6

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.5000MPS)	WIND SPEED CATEGORY 2 (2.5000MPS)	WIND SPEED CATEGORY 3 (4.3000MPS)	WIND SPEED CATEGORY 4 (6.8000MPS)	WIND SPEED CATEGORY 5 (9.5000MPS)	WIND SPEED CATEGORY 6 (12.5000MPS)
0.000	0.00118999	0.00170998	0.00000000	0.00000000	0.00000000	0.00000000
22.500	0.00058999	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000
45.000	0.00082999	0.00136999	0.00000000	0.00000000	0.00000000	0.00000000
67.500	0.00082999	0.00125999	0.00000000	0.00000000	0.00000000	0.00000000
90.000	0.00083999	0.00159998	0.00000000	0.00000000	0.00000000	0.00000000
112.500	0.00105999	0.00113999	0.00000000	0.00000000	0.00000000	0.00000000
135.000	0.00118999	0.00170998	0.00000000	0.00000000	0.00000000	0.00000000
157.500	0.00096999	0.00250997	0.00000000	0.00000000	0.00000000	0.00000000
180.000	0.00211998	0.00992990	0.00000000	0.00000000	0.00000000	0.00000000
202.500	0.00138999	0.00764992	0.00000000	0.00000000	0.00000000	0.00000000
225.000	0.00174998	0.01563984	0.00000000	0.00000000	0.00000000	0.00000000
247.500	0.00222998	0.01677983	0.00000000	0.00000000	0.00000000	0.00000000
270.000	0.00253997	0.01460985	0.00000000	0.00000000	0.00000000	0.00000000
292.500	0.00145999	0.00478995	0.00000000	0.00000000	0.00000000	0.00000000
315.000	0.00129999	0.00182998	0.00000000	0.00000000	0.00000000	0.00000000
337.500	0.00061999	0.00239998	0.00000000	0.00000000	0.00000000	0.00000000

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

- ISCLT INPUT DATA (CONT.) -

- VERTICAL POTENTIAL TEMPERATURE GRADIENT (DEGREES KELVIN/METER) -

	WIND SPEED CATEGORY 1	WIND SPEED CATEGORY 2	WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4	WIND SPEED CATEGORY 5	WIND SPEED CATEGORY 6
STABILITY CATEGORY 1	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00
STABILITY CATEGORY 2	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00
STABILITY CATEGORY 3	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00
STABILITY CATEGORY 4	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00
STABILITY CATEGORY 5	0.200000E-01	0.200000E-01	0.200000E-01	0.200000E-01	0.200000E-01	0.200000E-01
STABILITY CATEGORY 6	0.350000E-01	0.350000E-01	0.350000E-01	0.350000E-01	0.350000E-01	0.350000E-01

- WIND PROFILE POWER LAW EXPONENTS -

	WIND SPEED CATEGORY 1	WIND SPEED CATEGORY 2	WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4	WIND SPEED CATEGORY 5	WIND SPEED CATEGORY 6
STABILITY CATEGORY 1	0.700000E-01	0.700000E-01	0.700000E-01	0.700000E-01	0.700000E-01	0.700000E-01
STABILITY CATEGORY 2	0.700000E-01	0.700000E-01	0.700000E-01	0.700000E-01	0.700000E-01	0.700000E-01
STABILITY CATEGORY 3	0.100000E+00	0.100000E+00	0.100000E+00	0.100000E+00	0.100000E+00	0.100000E+00
STABILITY CATEGORY 4	0.150000E+00	0.150000E+00	0.150000E+00	0.150000E+00	0.150000E+00	0.150000E+00
STABILITY CATEGORY 5	0.350000E+00	0.350000E+00	0.350000E+00	0.350000E+00	0.350000E+00	0.350000E+00
STABILITY CATEGORY 6	0.550000E+00	0.550000E+00	0.550000E+00	0.550000E+00	0.550000E+00	0.550000E+00

- SOURCE INPUT DATA -

C A R D	T A P E	SOURCE NUMBER	SOURCE TYPE	X COORDINATE (M)	Y COORDINATE (M)	EMISSION HEIGHT (M)	BASE / ELEV- / ATION / (M) /	- SOURCE DETAILS DEPENDING ON TYPE -
X		1	STACK	0.00	0.00	35.00	0.00	GAS EXIT TEMP (DEG K)= 432.00, GAS EXIT VEL. (M/SEC)= 11.70, STACK DIAMETER (M)= 2.400, HEIGHT OF ASSO. BLDG. (M)= 0.00, WIDTH OF ASSO. BLDG. (M)= 0.00, WAKE EFFECTS FLAG = 0

- SOURCE STRENGTHS (GRAMS PER SEC) -

SEASON 1	SEASON 2	SEASON 3	SEASON 4
1.00000E+02			

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	500.000	700.000	900.000	1100.000	1300.000	1700.000	2200.000	2900.000	3800.000
	- CONCENTRATION -								
360.000	1.662817	4.285791	6.452370	7.888812	8.586329	9.033677	8.722522	7.795433	6.578213
350.000	1.128657	2.974489	4.459962	5.490659	5.994116	6.332581	6.136479	5.500951	4.653829
340.000	0.748141	1.879312	2.727975	3.316571	3.605739	3.788730	3.657539	3.270279	2.761788
330.000	0.586717	1.438472	2.031303	2.433469	2.633770	2.748710	2.633528	2.335348	1.957759
320.000	0.510171	1.202780	1.652561	1.958551	2.111520	2.188282	2.075995	1.818749	1.507998
[illegible]	0.464088	1.066915	1.432582	1.667461	1.780554	1.813397	1.688049	1.450088	1.182632
300.000	0.417829	0.978324	1.299994	1.494668	1.576515	1.567396	1.426328	1.200910	0.966083
290.000	0.435687	1.008078	1.327381	1.501785	1.561566	1.508641	1.334944	1.094989	0.863055
280.000	0.526283	1.265295	1.686128	1.910016	1.983104	1.910705	1.688639	1.381542	1.082077
270.000	0.694699	1.607898	2.130357	2.390321	2.462570	2.347407	2.059711	1.674805	1.302441
260.000	0.863811	2.015319	2.636712	2.937740	3.010345	2.844923	2.476013	2.000942	1.553154
250.000	1.188820	2.588021	3.299743	3.611623	3.655611	3.396770	2.917402	2.335209	1.803726
240.000	1.234033	2.749441	3.516777	3.863118	3.918648	3.647624	3.131143	2.499489	1.923256
230.000	1.348032	2.935056	3.735078	4.092554	4.143608	3.844352	3.287305	2.610435	1.996101
220.000	1.307853	2.838662	3.614855	3.964234	4.012937	3.715661	3.166584	2.503494	1.905361
210.000	1.087919	2.433819	3.135074	3.460321	3.510733	3.248872	2.759910	2.172752	1.647727
200.000	1.024732	2.256237	2.916028	3.225062	3.273696	3.030148	2.575101	2.029592	1.541552
190.000	1.013207	2.349631	3.105765	3.506948	3.622673	3.456949	3.024613	2.451175	1.903426
180.000	1.158577	2.611089	3.461918	3.923571	4.075401	3.940165	3.498815	2.879295	2.263509
170.000	0.836320	2.061746	2.841634	3.291698	3.453029	3.379115	3.025246	2.503774	1.977673
160.000	0.636486	1.665795	2.386143	2.795412	2.941581	2.886965	2.587983	2.143112	1.695278
150.000	0.580209	1.571068	2.306901	2.748144	2.912156	2.891336	2.620351	2.191599	1.746386
140.000	0.624771	1.664780	2.458709	2.933302	3.114107	3.109501	2.837763	2.390088	1.913534
130.000	0.583309	1.545824	2.273238	2.711504	2.887244	2.903984	2.674468	2.278972	1.848676
120.000	0.427729	1.168265	1.699827	2.048234	2.207921	2.267133	2.133462	1.867503	1.562150
110.000	0.366315	0.952261	1.334484	1.590318	1.726642	1.810312	1.756662	1.605263	1.411203
100.000	0.363728	0.879799	1.199036	1.435601	1.582574	1.740410	1.804717	1.783812	1.688740
90.000	0.421337	0.878794	1.145402	1.358267	1.511271	1.732314	1.902088	2.001803	1.995161
80.000	0.336991	0.793048	1.095349	1.352377	1.540957	1.827635	2.057343	2.193804	2.199172
70.000	0.303404	0.768772	1.123834	1.428020	1.658206	2.017491	2.302660	2.467457	2.467211
[illegible]	0.343729	0.888049	1.321713	1.682397	1.928772	2.285322	2.544247	2.665032	2.620831
[illegible]	0.458135	1.131299	1.675187	2.086970	2.341228	2.666216	2.859727	2.899250	2.781647
[illegible]	0.578190	1.426134	2.112732	2.615076	2.891279	3.189831	3.296888	3.212985	2.975637
30.000	0.771489	1.873960	2.753447	3.353119	3.647033	3.887736	3.857539	3.587070	3.177471
20.000	0.992120	2.422077	3.568806	4.331517	4.687885	4.925981	4.783383	4.323486	3.710252
10.000	1.240828	3.227766	4.856959	5.981202	6.519034	6.887225	6.688512	6.019246	5.122007

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	5000.000
	- CONCENTRATION -
360.000	5.284467
350.000	3.746109

TABLE 8.5.8 ISCLT EXAMPLE -- OUTPUT (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED (CONT.) **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	5000.000
	- CONCENTRATION -
340.000	2.219648
330.000	1.564782
320.000	1.196541
310.000	0.927410
300.000	0.751166
290.000	0.660579
280.000	0.818904
270.000	0.976518
260.000	1.166365
250.000	1.353103
240.000	1.436406
230.000	1.480586
220.000	1.406519
210.000	1.212478
200.000	1.136072
190.000	1.427346
180.000	1.714029
170.000	1.504821
160.000	1.294066
150.000	1.339498
140.000	1.470649
130.000	1.440867
120.000	1.258942
110.000	1.197001
100.000	1.524024
90.000	1.870260
80.000	2.062479
70.000	2.298158
60.000	2.412589
50.000	2.515064
40.000	2.613362
30.000	2.684602
20.000	3.037494
10.000	4.151242

*** END OF ISCLT PROGRAM, 1 SOURCES PROCESSED ***

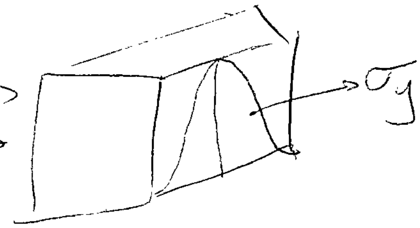
$\chi_{(ss)} = f\left(\frac{Q}{u}\right)$. cross-sectional area.

χ(stationary state) = mass/volume. in dispersion.

$Q = m/t$, u: wind speed (x/t)

$0 \leq C \leq 1$

(fixed frame of reference.
fixed frame = receptor

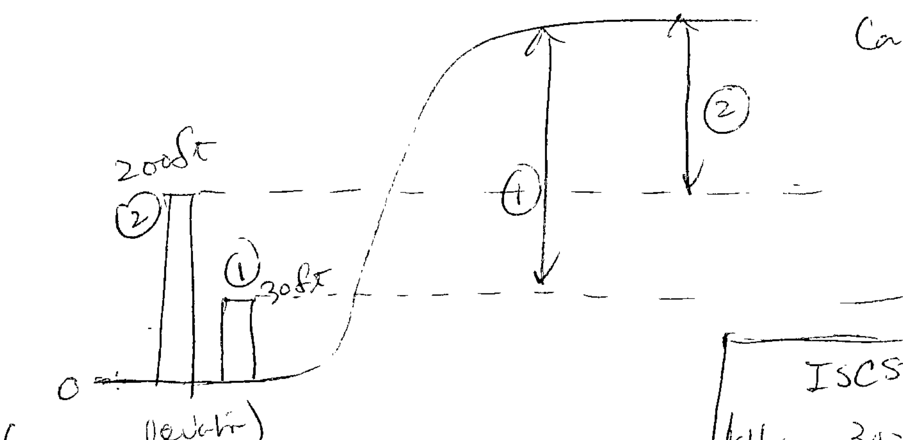


$\chi_{(NSS)} = f\left(\frac{M}{\sigma_x \sigma_y \sigma_z}\right) \frac{g(\mu g)}{m^3}$

M: total mass released

{ frame of reference moves as the center of cloud m
& point of frame = cloud

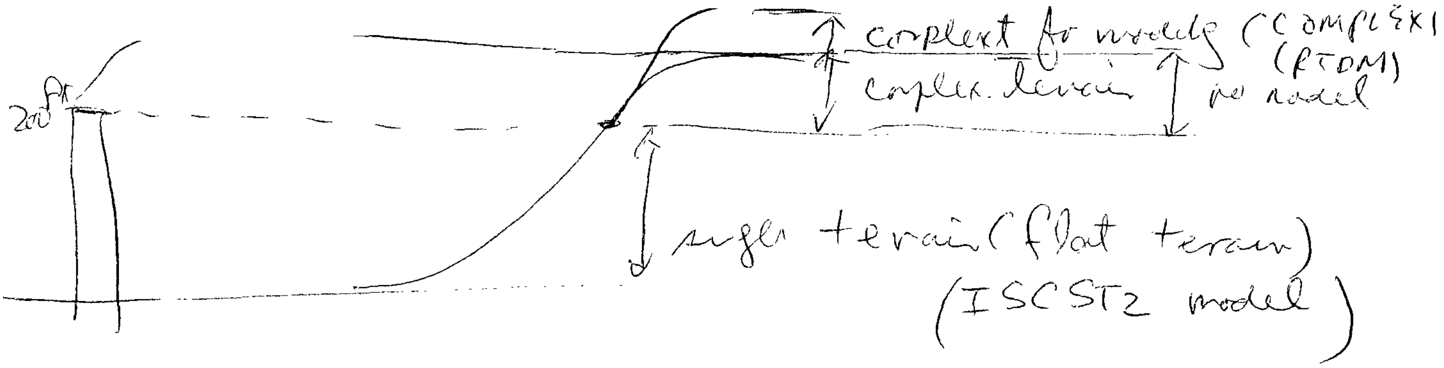
Complex terrain area.



	ISCST2	COMPLX1	Max (1hr)
1st hr	300	325	325
	275	270	275
	250	200	250
	275	265	283

3 hr average

* to get the highest value possibly

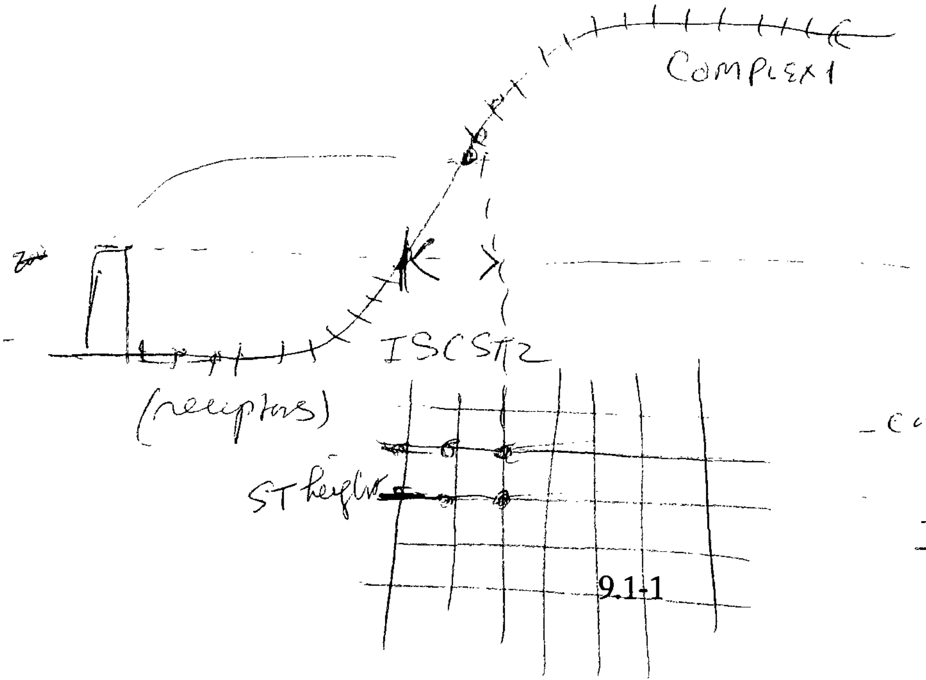


Lesson 9

Complex Terrain Modeling

3 Ranges: 1) Simple - ISCT2
2) Intermediate - no model - Valley calculation
3) complex - Complex1, RTDM.

Valley tech: so conservative, calculates for worst condition.
(stack top to centerplane height)



complex1 (325)
ISCST2 (300)
} larger value is chosen for intermediate terrain.

New Guideline: 9/90
5 preferred screening:

* CTSCREEN may be used to calculate concentrations under all stability conditions at all receptor locations on terrain above stacktop.

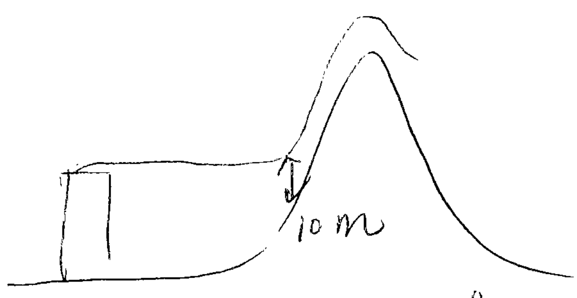
Valley Screening:

highest concentration occurs when the plume height becomes 10 m above the ground.

Critical height
lift and wrap concepts
(an flow model)

CTScreen
RTDM model
LONTZ / SONTZ

Valley = complex!



center of plume height is always 10 m above of the ~~[illegible]~~ terrain height.

9.1 Introduction

I. Definition of Complex Terrain:

Complex terrain is considered to be an area where some terrain features are higher than the top of the stack of the source(s) in question.

II. Complex Terrain Models -- General

A. No Refined Models

The Guideline document indicates that refined models have not been developed. Several major problems have been identified: (1) valley stagnation, (2) valley fumigation, (3) downwash on the leeside of terrain, and (4) conditions which cause plume impaction.

B. Screening and "Refined" Screening

The complex terrain models are to be used to access maximum concentrations due to plume impaction on high terrain. Terrain heights between stack height and plume height should be analyzed using both complex terrain models and simple terrain models and the maximum values used. The VALLEY and COMPLEX1 models should not be used to determine concentrations that result from: (1) valley stagnation, (2) valley fumigation, and (3) downwash on the leeside of terrain. These conditions may be addressed by using a site-specific model.

COMPLEX TERRAIN MODELS

Initial Screening	Models
Rural (F Stability)	VALLEY or COMPLEX1
Urban (E Stability)	VALLEY or COMPLEX1
Second-Level Screening	
Rural	COMPLEX1
Urban	SHORTZ/LONGZ
Third-Level Screening	
Rural	RTDM
Urban	none
Complicated Sources	
Rural/Urban	None

III. Complex Terrain Models -- Specific Models

A. VALLEY

VALLEY is the simplest of the terrain screening models. This algorithm is a steady-state, univariate gaussian plume dispersion algorithm designed for estimating either 24-hour or annual concentrations resulting from emissions from up to 50 (total) point and area sources. Calculations of ground-level pollutant concentrations are made for each frequency designated in an array defined by six stabilities, 16 wind directions, and six wind speeds for 112 program- designed receptor sites on a radial grid of variable scale. Empirical dispersion coefficients are used and include adjustments for plume rise and limited mixing. Plume height is adjusted according to terrain elevation and stability classes.

B. COMPLEX1

COMPLEX1 is a multiple point source code with terrain adjustment. The model specifications for testing were suggested by team "B" on complex terrain at the regional workshop on air quality modeling in Chicago in February 1980. It is a sequential model utilizing hourly meteorological input. It assumes a normal distribution in the vertical and a uniform distribution across a 22.5 degree sector. The initial screening technique for complex terrain applications, described in the Guideline On Air Quality Models (Revised), has been incorporated as an option in COMPLEX1.

C. SHORTZ

SHORTZ is designed to calculate the short-term pollution concentration produced at a large number of receptors by emissions from multiple stack, building, and area sources. SHORTZ uses sequential short-term (usually hourly) meteorological inputs to calculate concentrations for averaging times ranging from 1 hour to 1 year. The model is applicable in areas of both flat and complex terrain, including areas where terrain elevations exceed stack-top elevations. The program requires random-access mass storage capability. An associated compatible meteorological data processor is METZ.

D. LONGZ

LONGZ is designed to calculate the long-term pollutant concentration produced at a large number of receptors by emissions from multiple stack, building, and area sources. LONGZ uses statistical wind summaries to calculate long-term (seasonal or annual) average concentrations. The model is applicable in areas of both flat and complex terrain, including areas where terrain elevations exceed stack-top elevations. The program requires random-access mass storage capability.

E. RTDM

The Rough Terrain Diffusion Model is a sequential Gaussian plume model designed to estimate ground-level concentrations in rough (or flat) terrain in the vicinity of one or more co-located point sources. It is specifically designed for applications involving chemically stable atmospheric pollutants and is best suited for evaluation of buoyant plume behavior within about 15km from the source(s). Model results for receptors beyond about 15 km can be used with caution to 50 km. RTDM has special algorithms to deal with plume behavior in complex terrain, and is especially suited for rough terrain applications.

IV. Summary

V. Questions

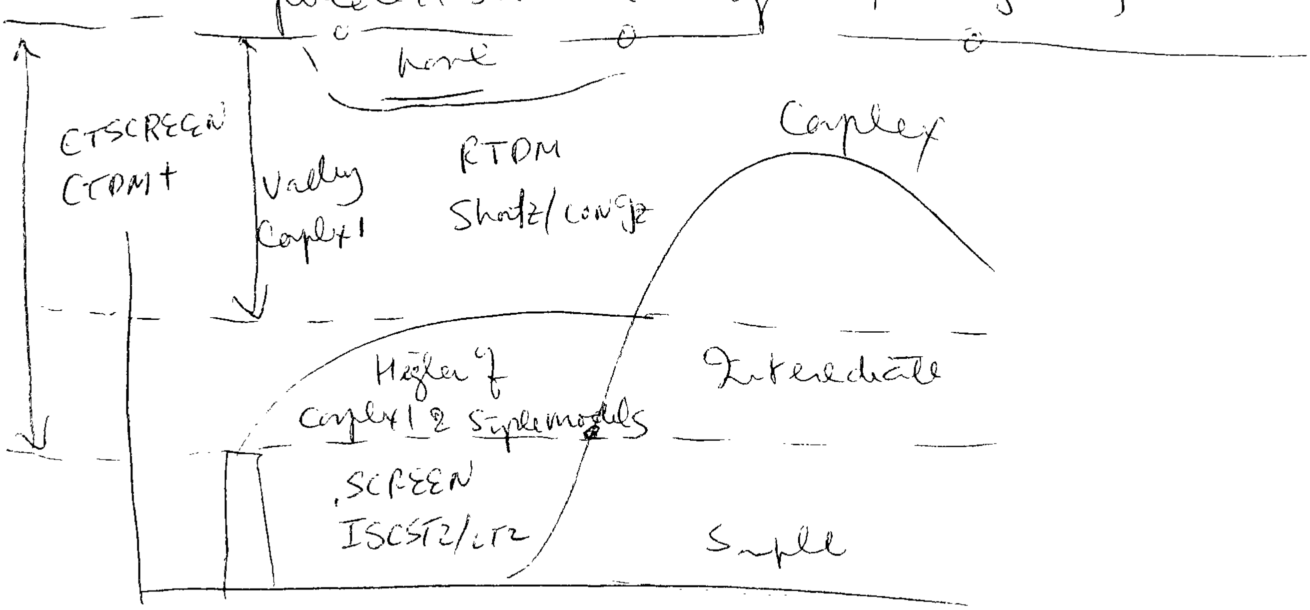
Screening   87 Revision

Initial Screening (2.0 m/s, Rural "F"/Urban "E")
Valley,
Complex I,

2nd-level Screening (1-yr On-Site met data)
Complex I (Rural)
Short Z/LONG Z (urban)

3rd-level Screening (1 yr on site met data)
RTDM (Rural)
None (urban)

Complicated sources (Stagnation, Fumigation, Leeside, Building)



VALLEY → CTSCREEN ⟶ [Intermediate Complex / ISCT2]

9.2 Initial Screening Techniques

I. Screening Using VALLEY

A. Applicability

This screening technique is appropriate for point sources with a plume height less than the highest terrain.

B. Screening Technique - Rural

The "VALLEY Screening Technique" as outlined in the VALLEY User's Guide should be used as the initial screening level. If violations are indicated by this method, the refined screening (second-level screening) may be used.

The VALLEY Screening Technique consists of determining concentrations using worst-case assumptions, as follows: (1) stability class F; (2) wind speed of 2.5 meters per second; (3) maximum of six hours of occurrence. Additionally, multiple sources should be modeled separately and individual concentrations for each wind direction summed.

The user may elect to use COMPLEX-1 with the "VALLEY Equivalent" option rather than using the VALLEY model.

II. Summary

III. Questions

visibility screen

Toxic screen

on Regulation

- ISCREEN

- TScreen -

Screen: Simple, Complex (Valley), Downwash, Cavity, Fumigation,

additional

output only - quantity

- CTDMPLUS: stable and unstable complexed terrain program (very extensive MET data)

refine model

(%)

frequency of occurrence (with met data)

GAQM Revision B (9/90) - Draft.

Screening: Valley*

- CTScreen (screening met data)

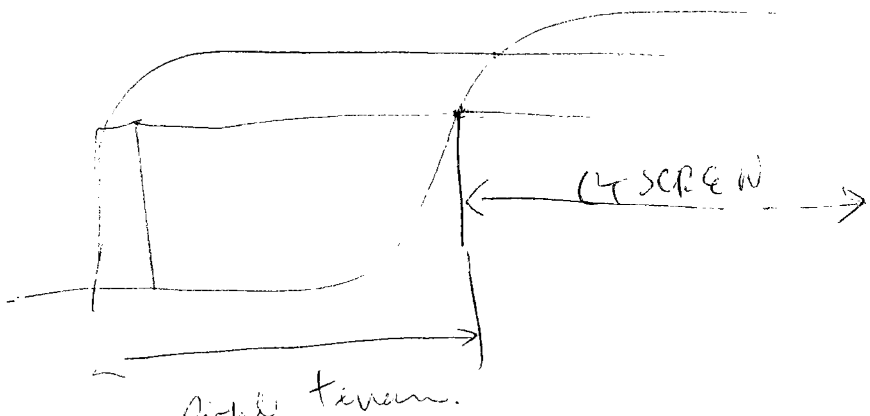
Complex I (onsite met data)*

SHORTZ/LONGZ (onsite - met data - urban)*

RTDM (stack top wind, mixing height)*

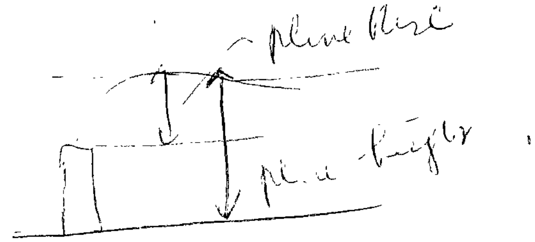
* only at receptors greater than or equal to plume height.

Refined: CTDMPLUS (on-site met data)



Find stable plume height = 103.3 m

Plume Rise



All the calculations are based on baseline of stack & receptors. relative to Receptor.

9.3 Demonstration of First-Level Screening

I. Screening Using VALLEY - 24-Hour SO_2

A. Stack Parameters for Demonstration

Emission Rate (g/s)	Stack Base Elevation (m AMSL)	Stack Height (m)	Stack Temp. (K)	Velocity (m/s)	Diameter (m)
100.0	495.	35.0	432.	11.7	2.40

B. Model Options

Model Options:

- 5000 meter mixing height
- 10 meter anemometer height
- default w-s profile exponent
- wind speed 2.5 m/s at 10 meters

C. Procedure

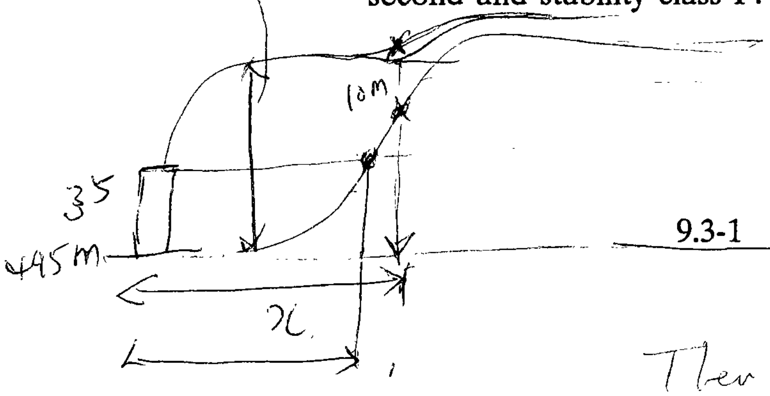
1. Critical Terrain Height

Calculated by the above conditions.

VALLEY limits the plume centerline elevation to a minimum of 10 meters. Therefore, the critical terrain elevation is plume height minus 10 meters. Determine critical plume height for 2.5 meters per second and stability class F:

103.3

plume height = (103.3)
− 10
93.3
495
Critical terrain 588.3 m elevation



Then X = 1600 m → Calculates

From PTPLU: $H = 89.3$ meters

$H_t = H + E = 89.3 + 495$

$H_t = 584.3$ meters Above Mean Sea Level (AMSL)

$H_c = H_t - 10 = 584.3 - 10$

$H_c = 574$ meters

Note: Older USGS maps show elevations in feet AMSL.

In some cases, elevated terrain near the source may cause maximum concentrations even though the terrain is less than plume height minus 10 meters.

2. From a topographic map of the area (Figure 9.3-1), determine locations with elevations in the following ranges: (1) greater than critical height; (2) between critical height and stack height; and, (3) less than stack height.

3. Calculate concentrations for locations that exceed stack height using VALLEY. Areas less than critical height should be modeled using simple terrain models with the terrain exceeding stack height "chopped" to stack height. The maximum concentration should be selected from among all model values.

4. From the Flat Top Mesa Quadrangle, the nearest terrain which exceeds stack height is 1146 meters toward the east. The nearest terrain that exceeds critical height is 1524 meters also toward the east. A single string of receptors toward the east will give the highest values. VALLEY calculates concentrations along 16 radials at seven equally spaced ring distances. If the USGS grid factor is selected, the ring distances are as follows:

Ring 1	487 meters
Ring 2	974 meters
Ring 3	1462 meters
Ring 4	1949 meters
Ring 5	2436 meters
Ring 6	2923 meters
Ring 7	3410 meters

Rings 2 & 3 are approximately equal to the desired distances.

5. Short-term (24 hours and less) averages are calculated by modeling one direction at a time using a wind speed of 2.5 meters per second and a stability class of F. This is accomplished by setting all frequencies of occurrence in the STAR Summary to zero except wind speed class 2 and stability class F for one direction which is set to 1.0.

   NOTE: The VALLEY model does not extrapolate wind speeds to stack height (not extrapolating is required for regulatory applications). However, for this example extrapolation is used, see below:

   $U_s = \bar{U} (h_s/10)^p$ Where: $\bar{U}$ is 2.5 m/s
   h_s is 35 m
   $U_s = 4.98$ m/s p is 0.55 (for F stab.)

6. For averaging periods that exceed six hours, only six hours of occurrence should be assumed. For example, a 24-hour concentration is calculated from a one-hour value by multiplying the one- hour value by 6/24. A three-hour value will be assumed to equal the one-hour value. The VALLEY model includes a 24-hour screening option that automatically makes the 6-hour persistence calculation.

D. VALLEY Input -- Table 9.3.1

E. VALLEY Results -- Table 9.3.2

The maximum 24-hour concentration is 259 micrograms per cubic meter.

II. Screening Using COMPLEX1 - TSP

A. Stack Parameters for Demonstration

Same as VALLEY

B. Model Options

Model Options:

- 5000 meter mixing height
- 10 meter anemometer height
- default w-s profile exponent
- terrain adjustment factors:
  0.5,0.5,0.5,0.5,0.,0.
- set ZMIN = 10.0

C. Procedure

The same procedure used for defining parameters for VALLEY is used for COMPLEX1. The correct receptor distances can be directly entered into the COMPLEX1 model.

COMPLEX1 contains a VALLEY screening option. This option will calculate 24-hour concentrations in a manner similar to VALLEY.

D. COMPLEX1 Input Data -- Table 9.3.3

E. COMPLEX1 Results -- Table 9.3.4

Compare the COMPLEX1 printout shown in Table 9.3.4 with the VALLEY printout shown in Table 9.3.2.

East (m)	North (m)	Elevation (m)	VALLEY (ug/m^3)	COMPLEX-I (ug/m^3)
974	0	530.0	14.53	16.05
1462	0	574.3	258.70	266.72

III. Summary

IV. Questions

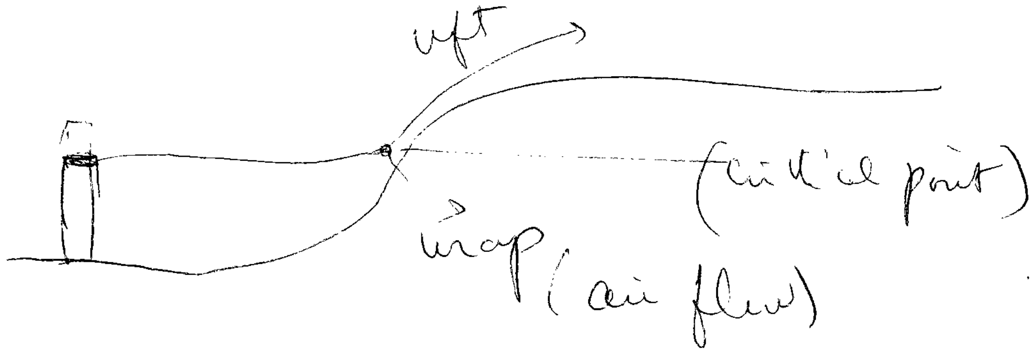


Figure 9.3-1 Topographic Map

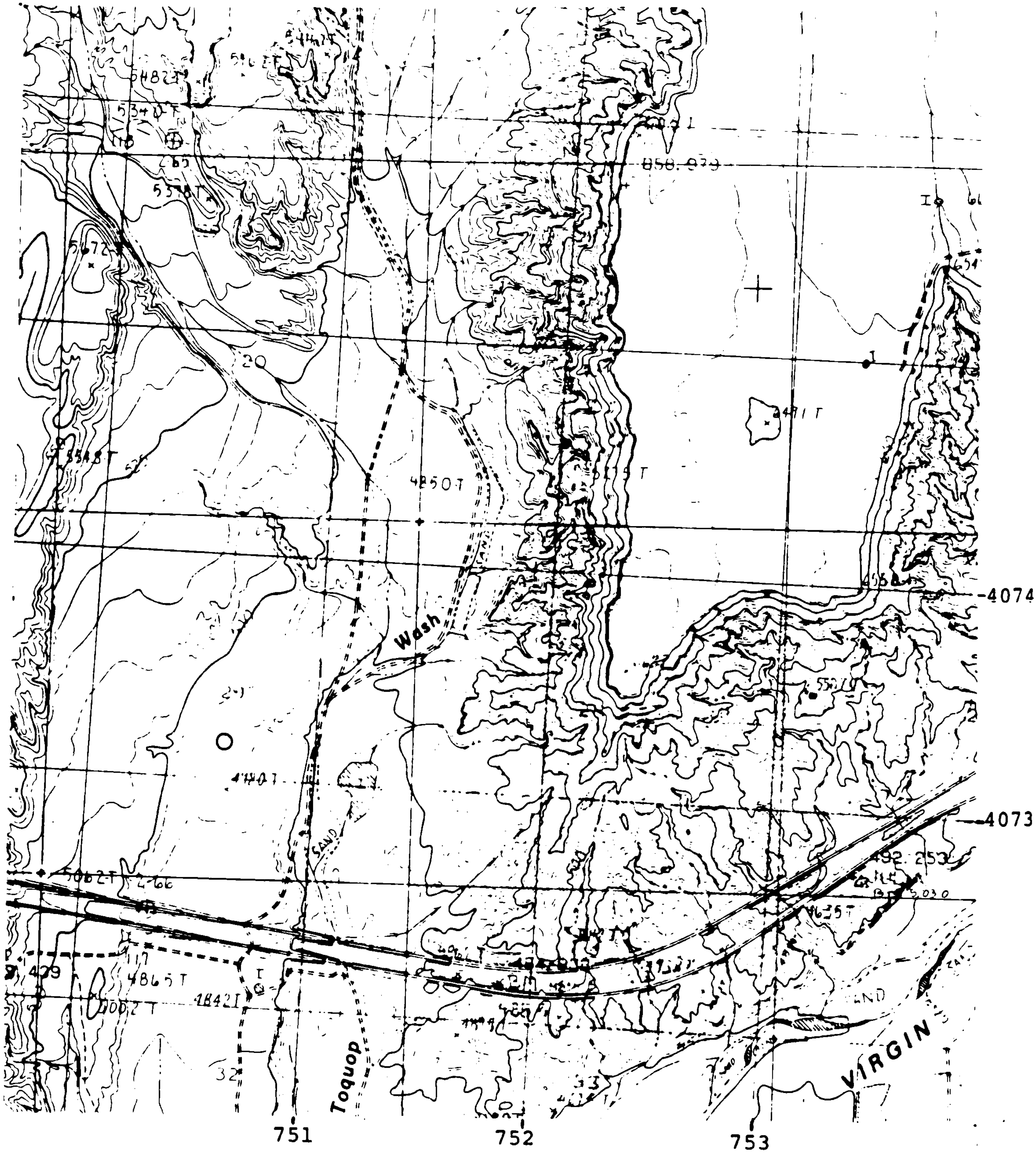


Table 9.3.1 VALLEY EXAMPLE INPUT

```
1624.1739.1884.1624.1624.1624.1624.







1013.2  293.1013.2
TEST RUN -- SO2                         PARTIAL WIND ROSE FOR EASY DUPLICATION.
60.90               1     6  2  1     4.  1110
MAIN STACK
   100.    35.   432.   11.7    2.4          460.    60.  1624.
      1.0      4.98
(6F2.0)
0.0.0.0.0.0.
0.0.0.0.0.0.
0.0.0.0.0.0.
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0.0.0.0.0.0.
0.0.0.0.0.0.
0.0.0.0.0.0.
0.0.0.0.0.0.
0.1.0.0.0.0.
0.0.0.0.0.0.
0.0.0.0.0.0.
0.0.0.0.0.0.
```

TABLE 9.3.2 VALLEY EXAMPLE OUTPUT

VALLEY (VERSION 85338)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 4. ADDITIONAL MODELS FOR REGULATORY USE,
IN UNAMAP (VERSION 6) JULY 86.

TEST RUN -- SO2

	SPD(MPS)	1.000	4.980	.000	.000	.000	.000
STABILITY	WIND DIR						
A	N	.0000	.0000	.0000	.0000	.0000	.0000
A	NNE	.0000	.0000	.0000	.0000	.0000	.0000
A	NE	.0000	.0000	.0000	.0000	.0000	.0000
A	ENE	.0000	.0000	.0000	.0000	.0000	.0000
A	E	.0000	.0000	.0000	.0000	.0000	.0000
A	ESE	.0000	.0000	.0000	.0000	.0000	.0000
A	SE	.0000	.0000	.0000	.0000	.0000	.0000
A	SSE	.0000	.0000	.0000	.0000	.0000	.0000
A	S	.0000	.0000	.0000	.0000	.0000	.0000
A	SSW	.0000	.0000	.0000	.0000	.0000	.0000
A	SW	.0000	.0000	.0000	.0000	.0000	.0000
A	WSW	.0000	.0000	.0000	.0000	.0000	.0000
A	W	.0000	.0000	.0000	.0000	.0000	.0000
A	WNW	.0000	.0000	.0000	.0000	.0000	.0000
A	NW	.0000	.0000	.0000	.0000	.0000	.0000
A	NNW	.0000	.0000	.0000	.0000	.0000	.0000
B	N	.0000	.0000	.0000	.0000	.0000	.0000
B	NNE	.0000	.0000	.0000	.0000	.0000	.0000
B	NE	.0000	.0000	.0000	.0000	.0000	.0000
B	ENE	.0000	.0000	.0000	.0000	.0000	.0000
B	E	.0000	.0000	.0000	.0000	.0000	.0000
B	ESE	.0000	.0000	.0000	.0000	.0000	.0000
B	SE	.0000	.0000	.0000	.0000	.0000	.0000
B	SSE	.0000	.0000	.0000	.0000	.0000	.0000
B	S	.0000	.0000	.0000	.0000	.0000	.0000
B	SSW	.0000	.0000	.0000	.0000	.0000	.0000
B	SW	.0000	.0000	.0000	.0000	.0000	.0000
B	WSW	.0000	.0000	.0000	.0000	.0000	.0000
B	W	.0000	.0000	.0000	.0000	.0000	.0000
B	WNW	.0000	.0000	.0000	.0000	.0000	.0000
B	NW	.0000	.0000	.0000	.0000	.0000	.0000
B	NNW	.0000	.0000	.0000	.0000	.0000	.0000

TABLE 9.3.2 VALLEY EXAMPLE OUTPUT (cont.)

C	N	.0000	.0000	.0000	.0000	.0000	.0000
C	NNE	.0000	.0000	.0000	.0000	.0000	.0000
C	NE	.0000	.0000	.0000	.0000	.0000	.0000
C	ENE	.0000	.0000	.0000	.0000	.0000	.0000
C	E	.0000	.0000	.0000	.0000	.0000	.0000
C	ESE	.0000	.0000	.0000	.0000	.0000	.0000
C	SE	.0000	.0000	.0000	.0000	.0000	.0000
C	SSE	.0000	.0000	.0000	.0000	.0000	.0000
C	S	.0000	.0000	.0000	[illegible]	.0000	.0000
C	SSW	.0000	.0000	.0000	[illegible]	.0000	.0000
C	SW	.0000	.0000	.0000	.0000	.0000	.0000
C	WSW	.0000	.0000	.0000	.0000	.0000	.0000
C	W	.0000	.0000	.0000	.0000	.0000	.0000
C	WNW	.0000	.0000	.0000	.0000	.0000	.0000
C	NW	.0000	.0000	.0000	.0000	.0000	.0000
C	NNW	.0000	.0000	.0000	.0000	.0000	.0000
D	N	.0000	.0000	.0000	.0000	.0000	.0000
D	NNE	.0000	.0000	.0000	.0000	.0000	.0000
D	NE	.0000	.0000	.0000	.0000	.0000	.0000
D	ENE	.0000	.0000	.0000	.0000	.0000	.0000
D	E	.0000	.0000	.0000	.0000	.0000	.0000
D	ESE	.0000	.0000	.0000	.0000	.0000	.0000
D	SE	.0000	.0000	.0000	.0000	.0000	.0000
D	SSE	.0000	.0000	.0000	.0000	.0000	.0000
D	S	.0000	.0000	.0000	.0000	.0000	.0000
D	SSW	.0000	.0000	.0000	.0000	.0000	.0000
D	SW	.0000	.0000	.0000	.0000	.0000	.0000
D	WSW	.0000	.0000	.0000	.0000	.0000	.0000
D	W	.0000	.0000	.0000	.0000	.0000	.0000
D	WNW	.0000	.0000	.0000	.0000	.0000	.0000
D	NW	.0000	.0000	.0000	.0000	.0000	.0000
D	NNW	.0000	.0000	.0000	.0000	.0000	.0000

TABLE 9.3.2 VALLEY EXAMPLE OUTPUT (cont.)

E	N	.0000	.0000	.0000	.0000	.0000	.0000
E	NNE	.0000	.0000	.0000	.0000	.0000	.0000
E	NE	.0000	.0000	.0000	.0000	.0000	.0000
E	ENE	.0000	.0000	.0000	.0000	.0000	.0000
E	E	.0000	.0000	.0000	.0000	.0000	.0000
E	ESE	.0000	.0000	.0000	.0000	.0000	.0000
E	SE	.0000	.0000	.0000	.0000	.0000	.0000
E	SSE	.0000	.0000	.0000	.0000	.0000	.0000
E	S	.0000	.0000	.0000	.0000	.0000	.0000
E	SSW	.0000	.0000	.0000	.0000	.0000	.0000
E	SW	.0000	.0000	.0000	.0000	.0000	.0000
E	WSW	.0000	.0000	.0000	.0000	.0000	.0000
E	W	.0000	.0000	.0000	.0000	.0000	.0000
E	WNW	.0000	.0000	.0000	.0000	.0000	.0000
E	NW	.0000	.0000	.0000	.0000	.0000	.0000
E	NNW	.0000	.0000	.0000	.0000	.0000	.0000
F	N	.0000	.0000	.0000	.0000	.0000	.0000
F	NNE	.0000	.0000	.0000	.0000	.0000	.0000
F	NE	.0000	.0000	.0000	.0000	.0000	.0000
F	ENE	.0000	.0000	.0000	.0000	.0000	.0000
F	E	.0000	.0000	.0000	.0000	.0000	.0000
F	ESE	.0000	.0000	.0000	.0000	.0000	.0000
F	SE	.0000	.0000	.0000	.0000	.0000	.0000
F	SSE	.0000	.0000	.0000	.0000	.0000	.0000
F	S	.0000	.0000	.0000	.0000	.0000	.0000
F	SSW	.0000	.0000	.0000	.0000	.0000	.0000
F	SW	.0000	.0000	.0000	.0000	.0000	.0000
F	WSW	.0000	.0000	.0000	.0000	.0000	.0000
F	W	.0000	1.0000	.0000	.0000	.0000	.0000
F	WNW	.0000	.0000	.0000	.0000	.0000	.0000
F	NW	.0000	.0000	.0000	.0000	.0000	.0000
F	NNW	.0000	.0000	.0000	.0000	.0000	.0000

TABLE 9.3.2 VALLEY EXAMPLE OUTPUT (cont.)

This page and following pages are abbreviated.

```
                                    .0                  .0                  .0
        .0                                      .0               .0                                        .0
      HLIFE=   4.00 HRS.  CONCTR CORRCTD TO STD COND VIA   FACTOR  .983.  MAX TOWARD  90. DEG.  NORTH TOWARD TOP.  PLOT 258.696

                                                     .0        .0
                               .0            .0                     .0            .0
                                    .0                                      .0
                                                          .0
                                          .0       .0       .0          .0
                                                        .0     .0
                                                 .0  *********   .0                    MULTIPLY PRINTED VALUES BY
                                                     * COORD *                            1.0E+00 TO GET CONC. IN UG/M3
   .0      .0      .0      .0      .0      .0    .0  *  ._   *   .0  14.5  258.7      .8     1.4     2.0     2.5
                                                     * 460,60*     SOR ELEV  COORDX  COORDY  STK HT  Q(GM/SEC)  FIXD DH
                                                 .0  *********   .0  1624.FT  460.00   60.00   35.M 1.0000E+02    ******
                                                        .0     .0
                                          .0       .0       .0          .0  BRIG.E  BRIG.F  DMIX    DMNI  STAR F WIDTH
                                                          .0                ******    54.     0.    100.   1.00*******
                                    .0                                      .0
                               .0            .0                     .0            .0          BRIGUN P(MB)  MWT
                                                     .0        .0                               422. 1013.    .0
                        .0                                .0                              .0
                                         .0  VV MEAN WIND SPDS(MPS) VV     .0
                 .0            1.00000  4.98000  .00000  .00000  .00000  .00000                 .0

        .0                                      .0               .0                                        .0
                                    .0                    .0                .0
                                                                                      AIR T   GAS T   DIAM  GAS V  FLOW
                                                                                       293.    432.    2.4   11.7  52.9

                                         .0                               .0
                                                 0 KM      .609KM   1.218KM   1.827KM   2.436KM   3.045KM   3.654KM
     BRIGGS STABLE CONSTANT IS 2.6.              ]....+....]....+....]....+....]....+....]....+....]....+....]
     BUOYANCY-INDUCED DISPERSION.                           .0    __RELOCATE 2/3 INCH DOWN
     RURL, SHRT-TERM MODE.          .0                      .0--/              .0          SLOPING TERRAIN CONCEPT.
```

TABLE 9.3.2 VALLEY EXAMPLE OUTPUT (cont.)

```
   TEST RUN -- SO2                         PARTIAL WIND ROSE FOR EASY DUPLICATION.
 SOURCE DATA.  PLOT 258.696
   SOURCE NAME              COORDX COORDY  STK HT  EMISS RATE  FIXD DH  SOR W  SOR H  BRIGUN  BRIGE  BRIGF  AIR T  GAS T  DIAM  GAS V
1 MAIN STACK                460.00  60.00     35. 1.0000E+02*********     0.  1624.    422.*******   54.  293.   432.   2.4  11.7

                              .0                                                     .0         VALLEY
1280                                                    .0                                 SUM CONC DUE TO ALL SRCS
                                          .0                   .0
                                 .0                                             .0
                                                                                      TEST RUN -- SO2
                                                                          PARTIAL WIND ROSE FOR EASY DUPLICATION.
                                    .0                  .0                 .0
          .0                                  .0                  .0                                     .0
    HLIFE=   4.00 HRS.  CONCTR CORRCTD TO STD COND VIA   FACTOR  .983.  MAX TOWARD  90. DEG.  NORTH TOWARD TOP.  PLOT 258.696
                  .0                                                                                .0
                                       .0                          .0
                                        .0       .0      .0        .0
                                                   .0    .0
                                            .0  *********   .0                        MULTIPLY PRINTED VALUES BY
                                                * COORD *                               1.0E+00 TO GET CONC. IN UG/M3
     .0      .0      .0      .0      .0      .0      .0  *  _._  *   .0   14.5   258.7      .8      1.4     2.0     2.5
                                                * 460,60*        SOR ELEV  COORDX  COORDY  STK HT  Q(GM/SEC)  FIXD DH
                                            .0  *********   .0   ******FT**********************M 0.0000E+00    ******
                                                   .0    .0
                                        .0       .0      .0        .0   BRIG.E  BRIG.F  DMIX    DMNI  STAR F WIDTH
                                                        .0              **************     0.    100.   1.00*******
                                    .0                                     .0
                                 .0            .0              .0             .0           BRIGUN P(MB)  MWT
                                                 .0        .0                            ******** 1013.    .0
                           .0                           .0                          .0
                                       .0  VV MEAN WIND SPDS(MPS) VV      .0
                  .0         1.00000  4.98000  .00000   .00000   .00000   .00000              .0

          .0                                  .0                  .0                                     .0
                                    .0                  .0                 .0
                                                                                     AIR T  GAS T   DIAM  GAS V  FLOW
                                                                                      293.****************************
                                 .0                                             .0
                                              0 KM      .609KM   1.218KM   1.827KM   2.436KM   3.045KM   3.654KM
  BRIGGS STABLE CONSTANT IS 2.6.              ]....+....]....+....]....+....]....+....]....+....]....+....]
  BUOYANCY-INDUCED DISPERSION.                          .0   __RELOCATE 2/3 INCH DOWN
  RURL, SHRT-TERM MODE.              .0                 .0--/               .0          SLOPING TERRAIN CONCEPT.
```

TABLE 9.3.2 VALLEY EXAMPLE OUTPUT (cont.)

```
                    49.5                                                     49.5       VALLEY
1280                                              49.5                                 GROUND ELEV DIFFERENCES.
                                        49.5                  49.5
                         49.5                                                   49.5
                                                                                     TEST RUN -- SO2
                                                                      PARTIAL WIND ROSE FOR EASY DUPLICATION.
                            49.5                  49.5                49.5
       49.5                                   49.5            49.5                                       49.5
           NORTH TOWARD TOP.  (1/10)((SOURCE HT(1))-(RECPTR HT(N))), HTS IN METERS.
          49.5                                                                             49.5
                                  49.5     49.5     49.5        49.5
                                              49.5  49.5
                                       49.5 ********* 49.5                                MULTIPLY PRINTED VALUES BY
                                            * COORD *                            1.0E+01 TO GET GROUND ELEV DIFF IN M
   49.5    49.5    49.5    49.5    49.5    49.5    49.5 *   _._   *   .0     -3.5    -7.9      .0      .0      .0      .0
                                            * 460,60*        SOR ELEV  COORDX  COORDY  STK HT  Q(GM/SEC)  FIXD DH
                                       49.5 ********* 49.5    1624.FT***********************M 0.0000E+00    ******
                                              49.5  49.5
                                  49.5     49.5     49.5        49.5   BRIG.E  BRIG.F  DMIX    DMNI  STAR F WIDTH
                                                  49.5                 *******************************************
                            49.5                                      49.5
                         49.5            49.5                49.5          49.5            BRIGUN P(MB)  MWT
                                             49.5      49.5                               ******** 1013.******
                 49.5                             49.5                               49.5
                                 49.5  VV MEAN WIND SPDS(MPS) VV   49.5
          49.5             *****************************************************                    49.5
       49.5                                   49.5            49.5                                       49.5
                            49.5                  49.5                49.5
                                                                                   AIR T  GAS T   DIAM  GAS V  FLOW
                                                                                    293.***************************
                         49.5                                                   49.5
                                        49.5                          49.5
                                                  49.5
                               49.5                                 49.5
                                              0 KM      .609KM  1.218KM  1.827KM  2.436KM  3.045KM  3.654KM
                                              ]....+....]....+....]....+....]....+....]....+....]....+....]
                                                  49.5   __RELOCATE 2/3 INCH DOWN
   RURL, SHRT-TERM MODE.           49.5           49.5--/            49.5           SLOPING TERRAIN CONCEPT.
```

Table 9.3.3 COMPLEX-I EXAMPLE INPUT

```
COMPLEX 1 SCREENING
COURSE 423
SAME SOURCE AS VALLEY
78     1   1      1    1 3     0    0          1.        1.    14400.
 1 1 0 1 1 0 0 0 1 1 1 1 0 0 1 1 1 1 1 0 0 0 0 0 0 0 1
  10.  .07  .07   .1  .15  .35  .55  0.5  0.5  0.5  0.5   0.   0.  10.
SOURCE #1       0.00    0.00   100.0           35.0   432.0     2.4    11.7495.
ENDPOINT
REC1        0.974     0.000       0.     530.0
REC2        1.462     0.000       0.     574.3
ENDREC
      293.
 270.
```

TABLE 9.3.4 COMPLEX-I EXEMPLE OUTPUT

```
            COMPLEX-1 (DATED 86064)
            AN AIR QUALITY DISPERSION MODEL IN
            SECTION 4. ADDITIONAL MODELS FOR REGULATORY USE
            IN UNAMAP (VERSION 6) JULY 86.

                         COMPLEX I  - VERSION 86064
COMPLEX 1 SCREENING
COURSE 423
SAME SOURCE AS VALLEY

                   GENERAL INPUT INFORMATION

 THIS RUN OF COMPLEX I/VALLEY OPTION IS FOR THE POLLUTANT SO2  FOR   1 WIND DIRECTIONS.
 A FACTOR OF      1.0000000 HAS BEEN SPECIFIED TO CONVERT USER LENGTH UNITS TO KILOMETERS.
  0 SIGNIFICANT SOURCES ARE TO BE CONSIDERED.
  A HALF-LIFE OF   14400.00 (SECONDS) HAS BEEN ASSUMED BY THE USER.
  A FACTOR OF      1.0000000 HAS BEEN SPECIFIED TO CONVERT USER HEIGHT UNITS TO METERS.

 OPTION      OPTION LIST                  OPTION SPECIFICATION : 0= IGNORE OPTION
                                                                 1= USE OPTION
                  TECHNICAL OPTIONS
    1        TERRAIN ADJUSTMENTS                                  1
    2        DO NOT INCLUDE STACK DOWNWASH CALCULATIONS           1
    3        DO NOT INCLUDE GRADUAL PLUME RISE CALCULATIONS       0
    4        CALCULATE INITIAL PLUME SIZE                         1
                  INPUT OPTIONS
    5        READ MET DATA FROM CARDS                             1
    6        READ HOURLY EMISSIONS                                0
    7        SPECIFY SIGNIFICANT SOURCES                          0
    8        READ RADIAL DISTANCES TO GENERATE RECEPTORS          0
                  PRINTED OUTPUT OPTIONS
    9        DELETE EMISSIONS WITH HEIGHT TABLE                   1
   10        DELETE MET DATA SUMMARY FOR AVG PERIOD               1
   11        DELETE HOURLY CONTRIBUTIONS                          1
   12        DELETE MET DATA ON HOURLY CONTRIBUTIONS              1
   13        DELETE FINAL PLUME RISE CALC ON HRLY CONTRIBUTIONS   0
   14        DELETE HOURLY SUMMARY                                0
   15        DELETE MET DATA ON HRLY SUMMARY                      1
   16        DELETE FINAL PLUME RISE CALC ON HRLY SUMMARY         1
   17        DELETE AVG-PERIOD CONTRIBUTIONS                      1
   18        DELETE AVERAGING PERIOD SUMMARY                      1
   19        DELETE AVG CONCENTRATIONS AND HI-5 TABLES            1


                  OTHER CONTROL AND OUTPUT OPTIONS
   20        RUN IS PART OF A SEGMENTED RUN                       0
   21        WRITE PARTIAL CONC TO DISK OR TAPE                   0
   22        WRITE HOURLY CONC TO DISK OR TAPE                    0
   23        WRITE AVG-PERIOD CONC TO DISK OR TAPE                0
   24        PUNCH AVG-PERIOD CONC ONTO CARDS                     0
   25        COMPLEX TERRAIN OPTION                               0
   26        CALM PROCESSING OPTION                               0
   27        VALLEY SCREENING OPTION                              1
```

TABLE 9.3.4 COMPLEX-I EXEMPLE OUTPUT (cont.)

ANEMOMETER HEIGHT IS: 10.00
EXPONENTS FOR POWER- LAW WIND INCREASE WITH HEIGHT ARE: .07, .07, .10, .15, .35, .55
TERRAIN ADJUSTMENTS ARE: .500, .500, .500, .500, .000, .000 ZMIN IS 10.0

BECAUSE THE VALLEY OPTION HAS BEEN SELECTED, THE FOLLOWING
OPTIONS AND PARAMETERS HAVE BEEN SET BY THE MODEL, OVERRIDING VALUES
PROVIDED BY THE USER:

```
IOPT(5), IOPT(10), IOPT(12), IOPT(15), IOPT(17), IOPT(18) = 1
IOPT(6), IOPT(20) THRU IOPT(26) = 0
NAVG = 1           NAV5 = 0
IHSTRT = 1         CONTER(6) = 0.
ZMIN = 10.         IKST = 6
QU = 2.5           QHL = 9999.
```

POINT SOURCE INFORMATION

SOURCE	EAST COORD (USER UNITS)	NORTH COORD	SO2(G/SEC) EMISSIONS	PART(G/SEC) EMISSIONS	STACK HT(M)	STACK TEMP(K)	STACK DIAM(M)	STACK VEL(M/SEC)	GRD-LVL ELEV USER HT UNITS	BUOY FLUX F M**4/S**3
1 SOURCE #1	.00	.00	100.00	.00	35.0	432.0	2.4	11.7	495.00	53.16

ADDITIONAL INFORMATION ON SOURCES.

EMISSION INFORMATION FOR   1 (NPT) POINT SOURCES HAS BEEN INPUT
0 SIGNIFICANT POINT SOURCES(NSIGP) ARE TO BE USED FOR THIS RUN
THE ORDER OF SIGNIFICANCE(IMPS) FOR 25 OR LESS POINT SOURCES USED IN THIS RUN AS LISTED BY POINT SOURCE NUMBER:

TABLE 9.3.4 COMPLEX-I EXEMPLE OUTPUT (cont.)

RECEPTOR INFORMATION

RECEPTOR	IDENTIFICATION	EAST COORD (USER UNITS)	NORTH COORD (USER UNITS)	RECEPTOR HT ABV LOCAL GRD LVL (METERS)	RECEPTOR GROUND LEVEL ELEVATION (USER HT UNITS)
1	REC1	.974	.000	.0	530.0
2	REC2	1.462	.000	.0	574.3

VALLEY METEOROLOGICAL INPUT DATA

PRESET BY MODEL:
MIXING HEIGHT (M) = 9999
STABILITY = 6
WIND SPEED (M/SEC) = 2.5

INPUT BY USER:
TEMPERATURE (K) = 293.0
WIND DIRECTIONS (DEG) = 270.0

COMPLEX 1 SCREENING
COURSE 423
SAME SOURCE AS VALLEY

VALLEY: SO2 24-HR AVERAGE SUMMARY CONCENTRATION TABLE (MICROGRAMS/M**3) (WIND DIRECTION (DEG) = 270.0)

RECEPTOR NO.	NAME	EAST COORD	NORTH COORD	RECEPTOR HT ABV GRD (M)	RECEPTOR GRD-LVL ELEV (USER HT UNITS)	TOTAL FROM SIGNIF POINT SOURCES	TOTAL FROM ALL SOURCES	CONCENTRATION RANK
1	REC1	.97	.00	.0	530.0	000000.0000	16.0518	2
2	REC2	1.46	.00	.0	574.3	000000.0000	266.7203	1

9.4 Second-Level Screening Techniques

I. Criteria for Selection of Second-Level Screening Models

A. Rural: COMPLEX1 for both short-term and long-term averaging periods.

B. Urban

1. Short-term: SHORTZ

2. Long-term: LONGZ

II. Meteorological Data

At least one year of on-site data is required. On-site data should have been subjected to quality assurance as listed in the Guideline document.

III. Rural Second-Level Screening -- COMPLEX1

A. Receptor sites

Receptor sites should be utilized in sufficient detail to estimate the highest concentrations and possible violations of a NAAQS or a PSD increment. Each receptor location should represent the highest elevation within the area represented by the receptor not the elevation of actual location of the receptor.

B. The following options should be selected:

IOPT(1) = 1
IOPT(4) = 1
IOPT(25) = 1
Terrain Adjustment Factors:
0.5, 0.5, 0.5, 0.5, 0.0, 0.0
ZMIN = 10.0

C. Gradual plume rise should be selected unless all elevated locations are further downwind than the distance to final rise.

IV. Urban Second-Level Screening -- SHORTZ and LONGZ

A. Receptor sites should be selected as stated above for COMPLEX1. Additionally, it may be necessary to place receptors over the entire urban area.

B. The following options should be selected:

Option	Selection
I Switch 9	If using NWS data, set=0
I Switch 17	Set = 1 (urban option)
GAMMA 1	Use default values
GAMMA 2	Always default to stable
XRY	Set = 0 (50 m expansion)
NS, VS, FRQ (SHORTZ) NUS, VS, FRQ (LONGZ)	Do not use (Flat terrain, only)
ALPHA	Select 0.9
SIGEPU (dispersion SIGAPU parameter)	Use Cramer curves (default)*
P (wind profile)	Select default values given in Table 2-2 of User's Guide*

* Use site-specific data if available.

V. Summary

VI. Questions

9.5 Demonstration of Second-Level Screening

I. Second-level Screening Using COMPLEX1

A. Stack Parameters for Demonstration

Emission Rate (g/s)	Stack Height (m)	Stack Temp. (K)	Velocity (m/s)	Diameter (m)
100.0	35.0	432.	11.7	2.40

B. Model Input Data

Model Options:

IOPT(1) = 1
IOPT(4) = 1
IOPT(25) = 1
Terrain Adjustment Factors:
0.5, 0.5, 0.5, 0.5, 0.0, 0.0
ZMIN = 10.0

C. Receptor Locations and Heights -- Table 9.5.1

D. Input Data -- Table 9.5.2, 9.5.4, 9.5.6, 9.5.8

E. Output Printout -- Table 9.5.3, 9.5.5, 9.5.7, 9.5.9

II. Summary

III. Questions

Table 9.5.1 RECEPTOR ELEVATIONS,(m)

Y-Axis (North)	Y-Axis (East) 751.6	751.7	751.8	751.9	752.0	752.1	752.2	752.3
4074.0	495	495	495	510	530	550	625	660
4073.9	495	495	525	530	550	585	635	660
4073.8	495	505	525	525	535	600	660	660
4073.7	495	495	495	520	535	580	660	660
4073.6	495	495	505	510	530	580	660	660
4073.5	495	520	525	530	535	585	650	660
4073.4	495	525	540	540	530	565	600	630
4073.3	510	515	520	520	520	535	575	585
4073.2	495	495	505	510	530	540	575	575
4073.1	495	495	505	510	535	540	550	550
4073.0	495	495	505	505	510	530	540	525

CRITICAL METEOROLOGICAL DATA

YEAR= 1983 MONTH - 11 DAY = 320

HOUR =	1	2	3	4	5	6	7	8
STABILITY	6	6	6	6	6	5	4	3
WND SPD (M/S)	2.06	3.09	3.09	3.09	2.57	3.09	3.09	1.54
TEMP (K)	280.4	280.9	280.4	279.8	279.3	279.8	279.8	281.5
FLW VEC (DEG)	23.0	**88.0**	**87.0**	**79.0**	**87.0**	96.0	169.0	6.0
RRL MX HT (M)	1239.4	1245.9	1252.4	1258.9	1265.4	1271.9	109.8	283.3
URB MX HT (M)	204.0	204.0	204.0	204.0	204.0	204.0	296.9	443.6

HOUR =	9	10	11	12	13	14	15	16
STABILITY	3	3	2	3	3	3	3	4
WND SPD (M/S)	2.06	2.06	2.06	2.57	2.06	3.09	2.57	2.06
TEMP (K)	284.8	287.6	288.7	290.4	290.9	291.5	292.0	290.9
FLW VEC (DEG)	130.0	274.0	316.0	306.0	254.0	219.0	166.0	266.0
RRL MX HT (M)	456.7	630.2	803.6	977.1	1150.5	1324.0	1324.0	1324.0
URB MX HT (M)	590.3	737.1	883.8	1030.5	1177.3	1324.0	1324.0	1324.0

HOUR -	17	18	19	20	21	22	23	24
STABILITY	5	4	4	4	4	5	4	5
WND SPD (M/S)	2.06	3.60	4.12	3.60	3.60	3.09	3.60	3.09
TEMP (K)	290.4	288.2	287.0	285.9	285.4	284.3	284.3	284.3
FLW VEC (DEG)	**68.0**	52.0	46.0	59.0	75.0	72.0	81.0	72.0
RRL MX HT (M)	1333.0	1350.5	1368.0	1385.6	1403.1	1420.6	1438.1	1455.7
URB MX HT (M)	1265.7	1350.5	1368.0	1385.6	1403.1	697.3	1438.1	470.0

TABLE 9.5.1 EXAMPLE INPUT -- 100 METER GRID SPACING

```
COMPLEX 1 SECOND-LEVEL SCREENING
COURSE 423
LESSON 9.5
83     1    1    365    24 4                    1.         1.
 1 0 0 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 1 1 0
  10. 0.07 0.07 0.10 0.15 0.35 0.55  0.5  0.5  0.5  0.5   0.   0.  10.
EXAMPLE       750.65  73.22            100.     35.    432.     2.4     11.7495.
ENDPOINT
2316983    316083
R1C1          751.6       73.0        0.      495.
R2C1          751.7       73.0        0.      495.
R3C1          751.8       73.0        0.      505.
R4C1          751.9       73.0        0.      505.
R5C1          752.0       73.0        0.      510.
R6C1          752.1       73.0        0.      530.
R7C1          752.2       73.0        0.      540.
R8C1          752.3       73.0        0.      525.
R1C2          751.6       73.1        0.      495.
R2C2          751.7       73.1        0.      495.
R3C2          751.8       73.1        0.      505.
R4C2          751.9       73.1        0.      510.
R5C2          752.0       73.1        0.      535.
R6C2          752.1       73.1        0.      540.
R7C2          752.2       73.1        0.      550.
R8C2          752.3       73.1        0.      550.
R1C3          751.6       73.2        0.      495.
R2C3          751.7       73.2        0.      495.
R3C3          751.8       73.2        0.      505.
R4C3          751.9       73.2        0.      510.
R5C3          752.0       73.2        0.      530.
R6C3          752.1       73.2        0.      540.
R7C3          752.2       73.2        0.      575.
R8C3          752.3       73.2        0.      575.
R1C4          751.6       73.3        0.      510.
R2C4          751.7       73.3        0.      515.
R3C4          751.8       73.3        0.      520.
R4C4          751.9       73.3        0.      520.
R5C4          752.0       73.3        0.      520.
R6C4          752.1       73.3        0.      535.
R7C4          752.2       73.3        0.      575.
R8C4          752.3       73.3        0.      585.
R1C5          751.6       73.4        0.      495.
R2C5          751.7       73.4        0.      525.
R3C5          751.8       73.4        0.      540.
R4C5          751.9       73.4        0.      540.
R5C5          752.0       73.4        0.      530.
R6C5          752.1       73.4        0.      565.
R7C5          752.2       73.4        0.      600.
R8C5          752.3       73.4        0.      635.
R1C6          751.6       73.5        0.      495.
R2C6          751.7       73.5        0.      520.
R3C6          751.8       73.5        0.      525.
R4C6          751.9       73.5        0.      530.
R5C6          752.0       73.5        0.      535.
R6C6          752.1       73.5        0.      585.
R7C6          752.2       73.5        0.      650.
R8C6          752.3       73.5        0.      660.
R1C7          751.6       73.6        0.      495.
R2C7          751.7       73.6        0.      495.
R3C7          751.8       73.6        0.      505.
R4C7          751.9       73.6        0.      510.
R5C7          752.0       73.6        0.      530.
R6C7          752.1       73.6        0.      580.
```

TABLE 9.5.1 EXAMPLE INPUT -- 100 METER GRID SPACING (cont.)

R7C7	752.2	73.6	0.	660.
R8C7	752.3	73.6	0.	660.
R1C8	751.6	73.7	0.	495.
R2C8	751.7	73.7	0.	495.
R3C8	751.8	73.7	0.	495.
R4C8	751.9	73.7	0.	520.
R5C8	752.0	73.7	0.	535.
R6C8	752.1	73.7	0.	580.
R7C8	752.2	73.7	0.	660.
R8C8	752.3	73.7	0.	660.
R1C9	751.6	73.8	0.	495.
R2C9	751.7	73.8	0.	505.
R3C9	751.8	73.8	0.	525.
R4C9	751.9	73.8	0.	525.
R5C9	752.0	73.8	0.	535.
R6C9	752.1	73.8	0.	600.
R7C9	752.2	73.8	0.	660.
R8C9	752.3	73.8	0.	660.
R1C10	751.6	73.9	0.	495.
R2C10	751.7	73.9	0.	495.
R3C10	751.8	73.9	0.	525.
R4C10	751.9	73.9	0.	530.
R5C10	752.0	73.9	0.	550.
R6C10	752.1	73.9	0.	585.
R7C10	752.2	73.9	0.	635.
R8C10	752.3	73.9	0.	660.
R1C11	751.6	74.0	0.	495.
R2C11	751.7	74.0	0.	495.
R3C11	751.8	74.0	0.	495.
R4C11	751.9	74.0	0.	510.
R5C11	752.0	74.0	0.	530.
R6C11	752.1	74.0	0.	550.
R7C11	752.2	74.0	0.	625.
R8C11	752.3	74.0	0.	660.
ENDREC				

Table 9.5.2 COMPLEX-I EXAMPLE OUTPUT
100 METER GRID SPACING (SELECTED PORTIONS)

COMPLEX-1 (DATED 86064)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 4. ADDITIONAL MODELS FOR REGULATORY USE
IN UNAMAP (VERSION 6) JULY 86.

COMPLEX I - VERSION 86064

COMPLEX 1 SECOND-LEVEL SCREENING
COURSE 423
LESSON 9.5

GENERAL INPUT INFORMATION

THIS RUN OF COMPLEX I -VERSION 86064 IS FOR THE POLLUTANT PART FOR 365 24-HOUR PERIODS.
CONCENTRATION ESTIMATES BEGIN ON HOUR- 1,JULIAN DAY- 1, YEAR-1983.
A FACTOR OF 1.0000000 HAS BEEN SPECIFIED TO CONVERT USER LENGTH UNITS TO KILOMETERS.
0 SIGNIFICANT SOURCES ARE TO BE CONSIDERED.
THIS RUN WILL NOT CONSIDER ANY POLLUTANT LOSS.
HIGH-FIVE SUMMARY CONCENTRATION TABLES WILL BE OUTPUT FOR 4 AVERAGING PERIODS.
AVG TIMES OF 1,3,8, AND 24 HOURS ARE AUTOMATICALLY DISPLAYED.
A FACTOR OF 1.0000000 HAS BEEN SPECIFIED TO CONVERT USER HEIGHT UNITS TO METERS.

OPTION	OPTION LIST	OPTION SPECIFICATION : 0= IGNORE OPTION 1= USE OPTION
	TECHNICAL OPTIONS	
1	TERRAIN ADJUSTMENTS	1
2	DO NOT INCLUDE STACK DOWNWASH CALCULATIONS	0
3	DO NOT INCLUDE GRADUAL PLUME RISE CALCULATIONS	0
4	CALCULATE INITIAL PLUME SIZE	1
	INPUT OPTIONS	
5	READ MET DATA FROM CARDS	0
6	READ HOURLY EMISSIONS	0
7	SPECIFY SIGNIFICANT SOURCES	0
8	READ RADIAL DISTANCES TO GENERATE RECEPTORS	0
	PRINTED OUTPUT OPTIONS	
9	DELETE EMISSIONS WITH HEIGHT TABLE	1
10	DELETE MET DATA SUMMARY FOR AVG PERIOD	1
11	DELETE HOURLY CONTRIBUTIONS	1
12	DELETE MET DATA ON HOURLY CONTRIBUTIONS	1
13	DELETE FINAL PLUME RISE CALC ON HRLY CONTRIBUTIONS	1
14	DELETE HOURLY SUMMARY	1
15	DELETE MET DATA ON HRLY SUMMARY	1
16	DELETE FINAL PLUME RISE CALC ON HRLY SUMMARY	1
17	DELETE AVG-PERIOD CONTRIBUTIONS	1
18	DELETE AVERAGING PERIOD SUMMARY	1
19	DELETE AVG CONCENTRATIONS AND HI-5 TABLES	0
	OTHER CONTROL AND OUTPUT OPTIONS	
20	RUN IS PART OF A SEGMENTED RUN	0
21	WRITE PARTIAL CONC TO DISK OR TAPE	0
22	WRITE HOURLY CONC TO DISK OR TAPE	0
23	WRITE AVG-PERIOD CONC TO DISK OR TAPE	0
24	PUNCH AVG-PERIOD CONC ONTO CARDS	0
25	COMPLEX TERRAIN OPTION	1
26	CALM PROCESSING OPTION	1
27	VALLEY SCREENING OPTION	0

Table 9.5.2 COMPLEX-I EXAMPLE OUTPUT (cont.)

ANEMOMETER HEIGHT IS: 10.00
EXPONENTS FOR POWER- LAW WIND INCREASE WITH HEIGHT ARE: .07, .07, .10, .15, .35, .55
TERRAIN ADJUSTMENTS ARE: .500, .500, .500, .500, .000, .000 ZMIN IS 10.0

POINT SOURCE INFORMATION

SOURCE	EAST COORD (USER UNITS)	NORTH COORD (USER UNITS)	SO2(G/SEC) EMISSIONS	PART(G/SEC) EMISSIONS	STACK HT(M)	STACK TEMP(K)	STACK DIAM(M)	STACK VEL(M/SEC)	POTEN. IMPACT (MICRO G/M**3)	EFF HT(M)	GRD-LVL ELEV USER HT UNITS	BUOY FLUX F M**4/S**3
1 EXAMPLE	750.65	73.22	.00	100.00	35.0	432.0	2.4	11.7	184.76	175.60	495.00	53.16

ADDITIONAL INFORMATION ON SOURCES.

EMISSION INFORMATION FOR 1 (NPT) POINT SOURCES HAS BEEN INPUT
0 SIGNIFICANT POINT SOURCES(NSIGP) ARE TO BE USED FOR THIS RUN
THE ORDER OF SIGNIFICANCE(IMPS) FOR 25 OR LESS POINT SOURCES USED IN THIS RUN AS LISTED BY POINT SOURCE NUMBER:

SURFACE MET DATA FROM STATION(ISFCD) 23169, YEAR(ISFCYR) 1983
MIXING HEIGHT DATA FROM STATION(IMXD) 3160, YEAR(IMXYR) 1983

RECEPTOR INFORMATION

RECEPTOR	IDENTIFICATION	EAST COORD (USER UNITS)	NORTH COORD (USER UNITS)	RECEPTOR HT ABV LOCAL GRD LVL (METERS)	RECEPTOR GROUND LEVEL ELEVATION (USER HT UNITS)
1	R1C1	751.600	73.000	.0	495.0
2	R2C1	751.700	73.000	.0	495.0
3	R3C1	751.800	73.000	.0	505.0
4	R4C1	751.900	73.000	.0	505.0
5	R5C1	752.000	73.000	.0	510.0
.					.
.					.
.					.
85	R5C11	752.000	74.000	.0	530.0
86	R6C11	752.100	74.000	.0	550.0
87	R7C11	752.200	74.000	.0	625.0
88	R8C11	752.300	74.000	.0	660.0

CALM HOURS (=1) FOR DAY 23	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY 36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM HOURS (=1) FOR DAY 37	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.														.										
.														.										
.														.										
CALM HOURS (=1) FOR DAY 335	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY 336	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY 340	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY 341	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY 359	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
CALM HOURS (=1) FOR DAY 363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

Table 9.5.2 COMPLEX-I EXAMPLE OUTPUT (cont.)

COMPLEX I - VERSION 86064

COMPLEX 1 SECOND-LEVEL SCREENING
COURSE 423
LESSON 9.5

\# CALMS FOR PERIOD: 32

RECEPTORS

RECEPTOR	IDENTIFICATION	EAST COORD (USER UNITS)	NORTH COORD (USER UNITS)	RECEPTOR HT ABV LOCAL GRD LVL (METERS)	RECEPTOR GROUND LEVEL ELEVATION (USER HT UNITS)	AVG CONC FOR PERIOD DAY 1.HR 1. TO DAY365.HR24. (MICROGRAMS/M**3)
1	R1C1	751.60	73.00	.0	495.0	1.04
2	R2C1	751.70	73.00	.0	495.0	1.09
3	R3C1	751.80	73.00	.0	505.0	1.36
4	R4C1	751.90	73.00	.0	505.0	1.40
.						.
.						.
.						.
75	R3C10	751.80	73.90	.0	525.0	8.00
76	R4C10	751.90	73.90	.0	530.0	10.24
77	R5C10	752.00	73.90	.0	550.0	25.03
78	R6C10	752.10	73.90	[illegible]	585.0	* 53.21
79	R7C10	752.20	73.90	.0	635.0	43.46
80	R8C10	752.30	73.90	.0	660.0	37.32
81	R1C11	751.60	74.00	.0	495.0	2.61
82	R2C11	751.70	74.00	.0	495.0	2.63
83	R3C11	751.80	74.00	.0	495.0	2.64
84	R4C11	751.90	74.00	.0	510.0	4.40
85	R5C11	752.00	74.00	.0	530.0	10.94
86	R6C11	752.10	74.00	:0	550.0	24.97
87	R7C11	752.20	74.00	.0	625.0	44.37
88	R8C11	752.30	74.00	.0	660.0	38.52

Table 9.5.2 COMPLEX-I EXAMPLE OUTPUT (cont.)

FIVE HIGHEST 24-HOUR PARTCONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)
C-FLAG IDENTIFIES CONCENTRATIONS AFFECTED BY CALM HOURS

RECEPTOR	1	2	3	4	5
1(751.60, 73.00)	25.45 (150,24)	16.48 (225,24)	11.05 (243,24)	10.58 (262,24)	9.75 (149,24)
2(751.70, 73.00)	24.23 (150,24)	16.66 (225,24)	11.49 (243,24)	11.23 (262,24)	10.77 (149,24)
3(751.80, 73.00)	23.92 (150,24)	17.17 (225,24)	13.18 (262,24)	12.85 (243,24)	12.36 (149,24)
4(751.90, 73.00)	22.07 (150,24)	13.19 (262,24)	12.63 (149,24)	12.63 (243,24)	10.64 (42,24)
5(752.00, 73.00)	20.67 (150,24)	13.94 (262,24)	13.05 (149,24)	12.74 (243,24)	8.31 (357,24)
6(752.10, 73.00)	25.56 (355,24)	24.02 (357,24)	20.15 (150,24)	19.07 (262,24)	19.00 (354,24)
7(752.20, 73.00)	48.22 (355,24)	39.19 (357,24)	33.88 (268,24)	33.55 (351,24)	32.66 (333,24)
8(752.30, 73.00)	23.05 (150,24)	19.19 (355,24)	17.47 (274,24)	16.10 (262,24)	15.92 (357,24)
9(751.60, 73.10)	30.28 (150,24)	13.77 (144,24)	11.04 (274,24)	10.93 (243,24)	10.43 (262,24)
10(751.70, 73.10)	29.63 (150,24)	12.15 (274,24)	11.44 (243,24)	11.15 (262,24)	9.23 (144,24)
11(751.80, 73.10)	30.36 (150,24)	14.78 (274,24)	13.16 (262,24)	12.86 (243,24)	9.52 (185,24)
12(751.90, 73.10)	29.42 (150,24)	16.05 (274,24)	13.22 (243,24)	10.37 (185,24)	9.24 (279,24)
13(752.00, 73.10)	31.59C (341,24)	30.89 (150,24)	29.14 (355,24)	25.45 (351,24)	25.20 (354,24)
14(752.10, 73.10)	42.26C (341,24)	40.69 (355,24)	32.90 (342,24)	32.76 (320,24)	32.43 (6,24)
15(752.20, 73.10)	68.97 (355,24)	67.10C (341,24)	59.66 (320,24)	59.41 (333,24)	54.53 (342,24)
16(752.30, 73.10)	66.32 (355,24)	64.77 (6,24)	64.26C (341,24)	57.21 (320,24)	57.08 (333,24)
17(751.60, 73.20)	30.30 (150,24)	15.80 (122,24)	10.94 (274,24)	10.88 (243,24)	10.56 (238,24)
18(751.70, 73.20)	29.69 (150,24)	13.83 (122,24)	12.09 (274,24)	11.42 (243,24)	9.44 (144,24)
19(751.80, 73.20)	30.46 (150,24)	14.75 (274,24)	12.87 (243,24)	12.85 (122,24)	10.10 (156,24)
20(751.90, 73.20)	29.53 (150,24)	16.04 (274,24)	13.24 (243,24)	11.91 (122,24)	10.35 (185,24)
21(752.00, 73.20)	30.33 (150,24)	24.82 (342,24)	23.52 (6,24)	22.68C (341,24)	22.09C (335,24)
22(752.10, 73.20)	49.38 (342,24)	48.50 (6,24)	43.13C (335,24)	42.29C (341,24)	40.71 (355,24)
23(752.20, 73.20)	191.98 (6,24)	184.58C (335,24)	181.69 (342,24)	173.83 (257,24)	142.81C (341,24)
24(752.30, 73.20)	176.78 (6,24)	172.07C (335,24)	168.17 (342,24)	160.80 (257,24)	131.52C (341,24)
25(751.60, 73.30)	26.66 (150,24)	17.12 (122,24)	14.27 (274,24)	11.87 (279,24)	11.71 (238,24)
26(751.70, 73.30)	26.31 (150,24)	16.50 (274,24)	15.75 (122,24)	14.51 (279,24)	12.43 (130,24)
27(751.80, 73.30)	25.41 (150,24)	18.28 (279,24)	18.15 (274,24)	14.92 (122,24)	13.81 (314,24)
28(751.90, 73.30)	23.63 (150,24)	18.48 (279,24)	18.19 (274,24)	14.56 (281,24)	14.07 (314,24)
29(752.00, 73.30)	21.88 (150,24)	18.60 (279,24)	18.00 (274,24)	15.44 (281,24)	15.20 (314,24)
30(752.10, 73.30)	42.29 (342,24)	39.23 (279,24)	37.48 (314,24)	34.64 (6,24)	31.73C (335,24)
31(752.20, 73.30)	210.49 (342,24)	191.67 (6,24)	184.32C (335,24)	174.95 (320,24)	173.56 (257,24)
32(752.30, 73.30)	217.62 (342,24)	208.49C (335,24)	182.34 (6,24)	175.86 (257,24)	165.15 (320,24)
33(751.60, 73.40)	15.34 (122,24)	11.18 (144,24)	10.15 (147,24)	9.94 (175,24)	9.81 (274,24)
34(751.70, 73.40)	20.62C (63,24)	20.25 (279,24)	19.17 (106,24)	17.93 (314,24)	17.64 (144,24)
35(751.80, 73.40)	58.68 (342,24)	54.14 (320,24)	53.61 (279,24)	52.26 (309,24)	52.00C (341,24)
36(751.90, 73.40)	58.34 (342,24)	54.11 (320,24)	52.50 (279,24)	51.57C (341,24)	50.39 (351,24)
37(752.00, 73.40)	30.64 (279,24)	29.42 (314,24)	28.21 (342,24)	27.96 (351,24)	26.78 (106,24)
38(752.10, 73.40)	189.11 (342,24)	182.33 (320,24)	159.83C (341,24)	156.38 (5,24)	154.44 (6,24)
39(752.20, 73.40)	245.30C (335,24)	240.12 (342,24)	211.63 (314,24)	199.02C (341,24)	178.30 (351,24)
40(752.30, 73.40)	208.27C (335,24)	201.92 (342,24)	191.66 (314,24)	166.54C (341,24)	153.18 (351,24)
41(751.60, 73.50)	14.97 (122,24)	14.65 (225,24)	11.85 (130,24)	11.16 (142,24)	9.82 (271,24)
42(751.70, 73.50)	18.93 (130,24)	17.77 (300,24)	16.43 (271,24)	16.03 (122,24)	15.41 (279,24)
43(751.80, 73.50)	23.03 (309,24)	20.32 (106,24)	20.18 (224,24)	19.67 (130,24)	19.64 (271,24)
44(751.90, 73.50)	30.35 (309,24)	29.42 (320,24)	28.50 (314,24)	26.62C (63,24)	26.59 (106,24)
45(752.00, 73.50)	49.78 (309,24)	45.84C (63,24)	44.28 (320,24)	41.08 (342,24)	38.82 (314,24)
46(752.10, 73.50) *	272.33 (320,24) *	250.40 (342,24)	232.43 (309,24)	219.55C (341,24)	217.39C (313,24)
47(752.20, 73.50)	214.43C (335,24)	204.92 (342,24)	191.52 (320,24)	187.78 (314,24)	187.77C (313,24)
48(752.30, 73.50)	191.95C (335,24)	183.14 (342,24)	172.54 (320,24)	169.58 (314,24)	168.86C (313,24)
49(751.60, 73.60)	24.84 (130,24)	18.78 (226,24)	14.88 (225,24)	12.26 (142,24)	10.45 (234,24)
50(751.70, 73.60)	18.48 (130,24)	15.54 (225,24)	12.25 (142,24)	10.20 (300,24)	9.34 (126,24)

Table 9.5.2 COMPLEX-I EXAMPLE OUTPUT (cont.)

51(751.80,	73.60)	17.94	(225,24)	14.39	(130,24)	13.36C	(63,24)	12.16	(300,24)	11.83	(142,24)
52(751.90,	73.60)	19.64	(225,24)	17.19C	(63,24)	15.08	(130,24)	13.72	(300,24)	12.39	(142,24)
53(752.00,	73.60)	36.05	(309,24)	30.10	(300,24)	29.19	(224,24)	29.02C	(63,24)	28.40	(47,24)
54(752.10,	73.60)	225.97	(309,24)	204.58	(18,24)	197.21	(291,24)	185.42	(7,24)	181.94C	(341,24)
55(752.20,	73.60)	194.86	(320,24)	171.66	(309,24)	170.09	(18,24)	154.49	(314,24)	149.99	(7,24)
56(752.30,	73.60)	205.16	(320,24)	167.05	(314,24)	158.04	(309,24)	156.82	(18,24)	145.12	(342,24)
57(751.60,	73.70)	18.20	(226,24)	17.73	(130,24)	17.28	(234,24)	15.13	(225,24)	14.93	(195,24)
58(751.70,	73.70)	21.03	(130,24)	17.51	(234,24)	15.49	(226,24)	15.48	(225,24)	14.05	(141,24)
59(751.80,	73.70)	23.11	(130,24)	15.68	(225,24)	13.66	(226,24)	12.16	(142,24)	11.18	(300,24)
60(751.90,	73.70)	28.52	(130,24)	26.67	(225,24)	26.32C	(63,24)	22.02	(300,24)	18.35	(309,24)
61(752.00,	73.70)	50.64C	(63,24)	49.81	(309,24)	49.71	(1,24)	43.51	(47,24)	38.97	(310,24)
62(752.10,	73.70)	220.83	(1,24)	220.22	(309,24)	204.28	(18,24)	196.11	(47,24)	188.09	(342,24)
63(752.20,	73.70)	178.02	(1,24)	168.83C	(335,24)	167.73	(309,24)	166.81C	(63,24)	166.27	(18,24)
64(752.30,	73.70)	164.79	(1,24)	156.25C	(335,24)	154.79	(309,24)	154.68C	(63,24)	153.65	(18,24)
65(751.60,	73.80)	22.15	(141,24)	17.48	(130,24)	17.44	(234,24)	17.03	(226,24)	15.05	(126,24)
66(751.70,	73.80)	23.44	(141,24)	19.29	(130,24)	18.89	(234,24)	17.80	(195,24)	16.09	(226,24)
67(751.80,	73.80)	36.09C	(63,24)	29.24	(225,24)	28.95	(1,24)	25.11	(289,24)	24.73	(90,24)
68(751.90,	73.80)	37.02C	(63,24)	28.49	(1,24)	28.09	(300,24)	27.18	(225,24)	23.76	(90,24)
69(752.00,	73.80)	57.20C	(63,24)	53.50	(1,24)	44.19	(309,24)	43.06	(46,24)	42.81	(300,24)
70(752.10,	73.80)	251.93	(300,24)	250.20	(1,24)	213.79	(46,24)	192.87C	(63,24)	187.41	(308,24)
71(752.20,	73.80)	191.82	(1,24)	171.67	(300,24)	171.51	(18,24)	162.54C	(63,24)	156.22	(309,24)
72(752.30,	73.80)	177.95	(1,24)	159.42	(47,24)	159.26	(18,24)	151.10C	(63,24)	150.99	(309,24)
73(751.60,	73.90)	23.71	(195,24)	21.32	(141,24)	17.56	(225,24)	17.52	(234,24)	15.16	(83,24)
74(751.70,	73.90)	26.01	(141,24)	21.17	(225,24)	21.03	(195,24)	17.46	(234,24)	16.61	(130,24)
75(751.80,	73.90)	36.07	(141,24)	29.82C	(63,24)	26.31	(15,24)	25.82	(104,24)	25.24	(225,24)
76(751.90,	73.90)	37.77	(1,24)	36.91C	(63,24)	34.27	(2,24)	33.63	(104,24)	32.76	(289,24)
77(75[illegible]	73.90)	112.87	(1,24)	110.52	(104,24)	101.86	(289,24)	98.40	(300,24)	97.43	(301,24)
78(752.10,	73.90)	249.41	(300,24)	243.59	(1,24)	207.48	(104,24)	207.22	(47,24)	204.37	(46,24)
79(752.20,	73.90)	208.20	(1,24)	205.97C	(63,24)	174.90	(46,24)	169.98	(300,24)	158.35	(364,24)
80(752.30,	73.90)	181.45	(1,24)	151.12	(46,24)	148.75	(300,24)	147.10C	(63,24)	139.77	(364,24)
81(751.60,	74.00)	31.90	(195,24)	20.97	(83,24)	19.80	(141,24)	18.12	(324,24)	17.51	(234,24)
82(751.70,	74.00)	27.87	(195,24)	21.87	(141,24)	18.89	(83,24)	17.63	(234,24)	16.29	(225,24)
83(751.80,	74.00)	22.69	(195,24)	21.98	(141,24)	20.13	(225,24)	17.05	(234,24)	15.65	(83,24)
84(751.90,	74.00)	29.00	(141,24)	23.39	(195,24)	18.70	(234,24)	18.08	(207,24)	17.61	(130,24)
85(752.00,	74.00)	39.29	(104,24)	37.29	(301,24)	37.08C	(63,24)	37.03	(15,24)	36.71	(141,24)
86(752.10,	74.00)	104.29	(104,24)	103.85	(1,24)	94.39	(2,24)	94.29	(288,24)	93.52	(300,24)
87(752.20,	74.00)	206.51	(1,24)	198.94	(104,24)	198.84	(300,24)	195.61C	(63,24)	185.97	(47,24)
88(752.30,	74.00)	177.15	(300,24)	176.03	(1,24)	170.56C	(63,24)	158.50	(47,24)	146.44	(46,24)

TABLE 9.5.3 COMPLEX-I EXAMPLE INPUT VARIANCE WITH HEIGHT AT CRITICAL RECEPTOR

```
COMPLEX 1 SECOND-LEVEL SCREENING
COURSE 423
LESSON 9.5
83   320   1      1   24 4                    1.        1.
 1 0 0 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 1 1 0
  10. 0.07 0.07 0.10 0.15 0.35 0.55  0.5  0.5  0.5  0.5   0.   0.  10.
EXAMPLE       750.65   73.22            100.     35.    432.     2.4     11.7495.
ENDPOINT
2316983    316083
R7C5A        752.1       73.5        0.       585.
R7C5B        752.1       73.5        0.       575.
R7C5C        752.1       73.5        0.       565.
R7C5D        752.1       73.5        0.       555.
R7C5E        752.1       73.5        0.       545.
R7C5F        752.1       73.5        0.       535.
R7C5G        752.1       73.5        0.       525.
R7C5H        752.1       73.5        0.       515.
R7C5I        752.1       73.5        0.       560.
HIGHER1      752.1       73.5        0.       600.
HIGHER2      752.1       73.5        0.       610.
HIGHER3      752.1       73.5        0.       620.
HIGHER4      752.1       73.5        0.       630.
HIGHER5      752.1       73.5        0.       640.
HIGHER6      752.1       73.5        0.       650.
HIGHER7      752.1       73.5        0.       660.
HIGHER8      752.1       73.5        0.       670.
ENDREC
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Table 9.5.4 COMPLEX-I EXAMPLE OUTPUT
VARIANCE WITH HEIGHT AT CRITICAL RECEPTOR (SELECTED PORTIONS)

FIVE HIGHEST 1-HOUR PART CONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)

RECEPTOR	1		2		3		4		5	
1(752.10, 73.50)	1035.23	(320, 5) *	1022.72	(320,17)	873.85	(320, 2)	873.75	(320, 3)	873.65	(320, 4)
2(752.10, 73.50)	1036.18	(320, 5)	881.96	(320, 2)	881.79	(320, 3)	881.63	(320, 4)	827.98	(320,17)
3(752.10, 73.50)	803.93	(320, 5)	754.65	(320, 2)	753.89	(320, 3)	753.15	(320, 4)	618.32	(320,17)
4(752.10, 73.50)	518.79	(320, 5)	506.12	(320, 2)	505.43	(320, 3)	504.75	(320, 4)	425.93	(320,17)
5(752.10, 73.50)	281.45	(320, 2)	280.98	(320, 3)	280.53	(320, 4)	280.25	(320, 5)	270.64	(320,17)
6(752.10, 73.50)	158.63	(320,17)	156.33	(320,22)	156.33	(320,24)	129.77	(320, 2)	129.53	(320, 3)
7(752.10, 73.50)	86.47	(320,22)	86.47	(320,24)	85.76	(320,17)	49.61	(320, 2)	49.51	(320, 3)
8(752.10, 73.50)	43.78	(320,22)	43.78	(320,24)	42.77	(320,17)	28.55	(320,21)	28.13	(320,23)
9(752.10, 73.50)	660.33	(320, 5)	632.66	(320, 2)	631.90	(320, 3)	631.17	(320, 4)	518.39	(320,17)
10(752.10, 73.50) *	1176.89	(320,17)	996.37	(320, 5)	840.77	(320, 2)	840.68	(320, 3)	840.59	(320, 4)
11(752.10, 73.50)	1165.59	(320,17)	970.47	(320, 5)	818.72	(320, 2)	818.64	(320, 3)	818.55	(320, 4)
12(752.10, 73.50)	1136.17	(320,17)	944.56	(320, 5)	796.68	(320, 2)	796.59	(320, 3)	796.51	(320, 4)
13(752.10, 73.50)	1106.75	(320,17)	918.66	(320, 5)	774.63	(320, 2)	774.55	(320, 3)	774.47	(320, 4)
14(752.10, 73.50)	1077.32	(320,17)	892.75	(320, 5)	752.58	(320, 2)	752.50	(320, 3)	752.43	(320, 4)
15(752.10, 73.50)	1047.90	(320,17)	866.85	(320, 5)	730.53	(320, 2)	730.46	(320, 3)	730.39	(320, 4)
16(752.10, 73.50)	1018.48	(320,17)	840.95	(320, 5)	708.48	(320, 2)	708.41	(320, 3)	708.35	(320, 4)
17(752.10, 73.50)	989.06	(320,17)	815.04	(320, 5)	686.43	(320, 2)	686.37	(320, 3)	686.31	(320, 4)

FIVE HIGHEST 24-HOUR PARTCONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)
C-FLAG IDENTIFIES CONCENTRATIONS AFFECTED BY CALM HOURS

RECEPTOR	1		2		3		4		5	
1(752.10, 73.50)	272.33	(320,24) *	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
2(752.10, 73.50)	254.17	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
3(752.10, 73.50)	206.01	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
4(752.10, 73.50)	141.10	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
5(752.10, 73.50)	84.39	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
6(752.10, 73.50)	44.91	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
7(752.10, 73.50)	21.98	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
8(752.10, 73.50)	10.39	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
9(752.10, 73.50)	173.52	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
10(752.10, 73.50) *	276.88	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
11(752.10, 73.50)	273.21	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
12(752.10, 73.50)	269.01	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
13(752.10, 73.50)	264.98	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
14(752.10, 73.50)	258.24	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
15(752.10, 73.50)	251.48	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
16(752.10, 73.50)	244.72	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)
17(752.10, 73.50)	237.95	(320,24)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)	.00	(0, 0)

TABLE 9.5.5 COMPLEX-I EXAMPLE INPUT
50 METER GRID SPACING

```
COMPLEX 1 SECOND-LEVEL SCREENING
COURSE 423
LESSON 9.5
83     1   1    365    24 4                       1.        1.
 1 0 0 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 1 1 0
  10. 0.07 0.07 0.10 0.15 0.35 0.55  0.5  0.5  0.5  0.5   0.   0.  10.
EXAMPLE       750.65   73.22           100.      35.    432.     2.4    11.7495.
ENDPOINT
2316983    316083
R5C5        752.00     73.40        0.       520.
R5C5M       752.05     73.40        0.       535.
R6C5        752.10     73.40        0.       575.
R6C5M       752.15     73.40        0.       575.
R7C5        752.20     73.40        0.       580.
R5C5MM      752.00     73.45        0.       535.
R5C5MM      752.05     73.45        0.       550.
R6C5MM      752.10     73.45        0.       580.
R6C5MM      752.15     73.45        0.       595.
R7C5MM      752.20     73.45        0.       605.
R5C6        752.00     73.50        0.       535.
R5C6M       752.05     73.50        0.       545.
R6C6        752.10     73.50        0.       580.
R6C6M       752.15     73.50        0.       600.
R7C6        752.20     73.50        0.       625.
R5C6MM      752.00     73.55        0.       520.
R5C6MM      752.05     73.55        0.       535.
R6C6MM      752.10     73.55        0.       560.
R6C6MM      752.15     73.55        0.       595.
R7C6MM      752.20     73.55        0.       625.
R5C7        752.00     73.60        0.       525.
R5C7M       752.05     73.60        0.       535.
R6C7        752.10     73.60        0.       565.
R6C7M       752.15     73.60        0.       590.
R7C7        752.20     73.60        0.       630.
ENDREC
```

Table 9.5.6 COMPLEX-I EXAMPLE OUTPUT
50 METER GRID SPACING (SELECTED PORTIONS)

FIVE HIGHEST 24-HOUR PARTCONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)
C-FLAG IDENTIFIES CONCENTRATIONS AFFECTED BY CALM HOURS

RECEPTOR	1	2	3	4	5
1(752.00, 73.40)	18.61 (279,24)	17.08 (106,24)	16.72 (274,24)	16.42 (314,24)	14.29 (351,24)
2(752.05, 73.40)	41.19 (342,24)	39.46 (279,24)	39.04 (314,24)	37.97 (320,24)	37.74 (351,24)
3(752.10, 73.40)	236.50 (342,24)	222.57 (320,24)	205.43C (341,24)	201.52 (5,24)	197.08C (335,24)
4(752.15, 73.40)	226.83 (342,24)	213.58 (320,24)	196.81C (341,24)	192.98 (5,24)	189.93C (335,24)
5(752.20, 73.40)	228.23 (342,24)	205.34C (335,24)	199.77C (341,24)	179.52 (314,24)	163.13 (279,24)
6(752.00, 73.45)	41.04 (342,24)	39.16C (63,24)	38.75 (314,24)	37.72 (320,24)	36.82C (341,24)
7(752.05, 73.45)	103.32 (342,24)	98.82 (320,24)	88.53C (341,24)	85.40 (309,24)	81.26 (7,24)
8(752.10, 73.45)	244.58 (342,24)	227.36 (320,24)	220.86C (335,24)	216.70C (341,24)	210.66C (313,24)
9(752.15, 73.45)	252.99C (335,24)	222.11 (342,24)	221.39 (320,24)	211.52C (313,24)	209.33C (341,24)
10(752.20, 73.45)	242.76C (335,24)	209.97 (342,24)	209.80 (320,24)	202.86 (314,24)	200.16C (313,24)
11(752.00, 73.50)	49.78 (309,24)	45.84C (63,24)	44.28 (320,24)	41.08 (342,24)	38.82 (314,24)
12(752.05, 73.50)	87.51 (309,24)	85.32 (320,24)	78.17 (342,24)	70.58C (63,24)	67.69C (341,24)
13(752.10, 73.50) *	264.43 (320,24) *	242.74 (342,24)	230.50 (309,24)	215.02C (341,24)	209.16C (313,24)
14(752.15, 73.50)	244.14 (342,24)	218.57 (320,24)	217.03C (313,24)	209.27 (314,24)	205.15C (341,24)
15(752.20, 73.50)	229.62C (335,24)	219.89 (342,24)	202.95 (320,24)	199.84C (313,24)	198.33 (314,24)
16(752.00, 73.55)	18.27 (224,24)	17.48 (309,24)	17.19 (106,24)	16.58 (130,24)	16.32C (63,24)
17(752.05, 73.55)	49.80 (309,[illegible])	39.30 (320,24)	38.18 (224,24)	36.74 (7,24)	36.12 (18,24)
18(752.10, 73.55)	172.42 (320,24)	158.83 (309,24)	135.07 (342,24)	134.87 (291,24)	130.63 (18,24)
19(752.15, 73.55)	264.07 (320,24)	205.53 (314,24)	197.80 (342,24)	192.36 (309,24)	187.73 (5,24)
20(752.20, 73.55)	243.81 (320,24)	221.71 (309,24)	218.07 (342,24)	196.78 (314,24)	183.53C (335,24)
21(752.00, 73.60)	25.47 (309,24)	24.38 (300,24)	22.85 (224,24)	22.70C (63,24)	21.73 (47,24)
22(752.05, 73.60)	49.77 (309,24)	38.43 (7,24)	38.23 (224,24)	37.75 (300,24)	37.19 (47,24)
23(752.10, 73.60)	182.07 (309,24)	157.83 (291,24)	153.40 (18,24)	142.28 (224,24)	138.13 (7,24)
24(752.15, 73.60)	226.19 (320,24)	216.86 (309,24)	208.00 (18,24)	187.98 (5,24)	186.94 (291,24)
25(752.20, 73.60)	210.63 (320,24)	187.37 (309,24)	185.37 (18,24)	165.38 (314,24)	162.49 (5,24)

TABLE 9.5.7 COMPLEX-I EXAMPLE INPUT UNIFORM TERRAIN

```
COMPLEX 1 SECOND-LEVEL SCREENING
COURSE 423
LESSON 9.5
83     1   1    365    24 4                    1.        1.
 1 0 0 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 1 1 0
  10. 0.07 0.07 0.10 0.15 0.35 0.55  0.5  0.5  0.5  0.5   0.   0.  10.
EXAMPLE        750.65   73.22           100.     35.    432.     2.4     11.7495.
ENDPOINT
2316983    316083
R1C1          751.60      72.4         0.       500.
R1C2          751.80      72.4         0.       540.
R1C3          752.00      72.4         0.       550.
R1C4          752.10      72.4         0.       575.
R1C5          752.18      72.4         0.       600.
R1C6          752.21      72.4         0.       625.
R1C7          752.23      72.4         0.       650.
R1C8          752.23      72.4         0.       660.
R2C1          751.60      72.5         0.       500.
R2C2          751.80      72.5         0.       540.
R2C3          752.00      72.5         0.       550.
R2C4          752.10      72.5         0.       575.
R2C5          752.18      72.5         0.       600.
R2C6          752.21      72.5         0.       625.
R2C7          752.23      72.5         0.       650.
R2C8          752.23      72.5         0.       660.
R3C1          751.60      72.6         0.       500.
R3C2          751.80      72.6         0.       540.
R3C3          752.00      72.6         0.       550.
R3C4          752.10      72.6         0.       575.
R3C5          752.18      72.6         0.       600.
R3C6          752.21      72.6         0.       625.
R3C7          752.23      72.6         0.       650.
R3C8          752.23      72.6         0.       660.
R4C1          751.60      72.7         0.       500.
R4C2          751.80      72.7         0.       540.
R4C3          752.00      72.7         0.       550.
R4C4          752.10      72.7         0.       575.
R4C5          752.18      72.7         0.       600.
R4C6          752.21      72.7         0.       625.
R4C7          752.23      72.7         0.       650.
R4C8          752.23      72.7         0.       660.
R5C1          751.60      72.8         0.       500.
R5C2          751.80      72.8         0.       540.
R5C3          752.00      72.8         0.       550.
R5C4          752.10      72.8         0.       575.
R5C5          752.18      72.8         0.       600.
R5C6          752.21      72.8         0.       625.
R5C7          752.23      72.8         0.       650.
R5C8          752.23      72.8         0.       660.
R6C1          751.60      72.9         0.       500.
R6C2          751.80      72.9         0.       540.
R6C3          752.00      72.9         0.       550.
R6C4          752.10      72.9         0.       575.
R6C5          752.18      72.9         0.       600.
R6C6          752.21      72.9         0.       625.
R6C7          752.23      72.9         0.       650.
R6C8          752.23      72.9         0.       660.
R7C1          751.60      73.0         0.       500.
R7C2          751.80      73.0         0.       540.
R7C3          752.00      73.0         0.       550.
R7C4          752.10      73.0         0.       575.
```

TABLE 9.5.7 COMPLEX-I EXAMPLE INPUT UNIFORM TERRAIN (cont.)

R7C5	752.18	73.0	0.	600.
R7C6	752.21	73.0	0.	625.
R7C7	752.23	73.0	0.	650.
R7C8	752.23	73.0	0.	660.
R8C1	751.60	73.1	0.	500.
R8C2	751.80	73.1	0.	540.
R8C3	752.00	73.1	0.	550.
R8C4	752.10	73.1	0.	575.
R8C5	752.18	73.1	0.	600.
R8C6	752.21	73.1	0.	625.
R8C7	752.23	73.1	0.	650.
R8C8	752.23	73.1	0.	660.
R9C1	751.60	73.2	0.	500.
R9C2	751.80	73.2	0.	540.
R9C3	752.00	73.2	0.	550.
R9C4	752.10	73.2	0.	575.
R9C5	752.18	73.2	0.	600.
R9C6	752.21	73.2	0.	625.
R9C7	752.23	73.2	0.	650.
R9C8	752.23	73.2	0.	660.
R10C1	751.60	73.3	0.	500.
R10C2	751.80	73.3	0.	540.
R10C3	752.00	73.3	0.	550.
R10C4	752.10	73.3	0.	575.
R10C5	752.18	73.3	0.	600.
R10C6	752.21	73.3	0.	625.
R10C7	752.23	73.3	0.	650.
R10C8	752.23	73.3	0.	660.
R11C1	751.60	73.4	0.	500.
R11C2	751.80	73.4	0.	540.
R11C3	752.00	73.4	0.	550.
R11C4	752.10	73.4	0.	575.
R11C5	752.18	73.4	0.	600.
R11C6	752.21	73.4	0.	625.
R11C7	752.23	73.4	0.	650.
R11C8	752.23	73.4	0.	660.
R12C1	751.60	73.5	0.	500.
R12C2	751.80	73.5	0.	540.
R12C3	752.00	73.5	0.	550.
R12C4	752.10	[illegible]	0.	575.
R12C5	752.18	[illegible]	0.	600.
R12C6	752.21	[illegible]	0.	625.
R12C7	752.23	73.5	0.	650.
R12C8	752.23	73.5	0.	660.
R13C1	751.60	73.6	0.	500.
R13C2	751.80	73.6	0.	540.
R13C3	752.00	73.6	0.	550.
R13C4	752.10	73.6	0.	575.
R13C5	752.18	73.6	0.	600.
R13C6	752.21	73.6	0.	625.
R13C7	752.23	73.6	0.	650.
R13C8	752.23	73.6	0.	660.
R14C1	751.60	73.7	0.	500.
R14C2	751.80	73.7	0.	540.
R14C3	752.00	73.7	0.	550.
R14C4	752.10	73.7	0.	575.
R14C5	752.18	73.7	0.	600.
R14C6	752.21	73.7	0.	625.
R14C7	752.23	73.7	0.	650.
R14C8	752.23	73.7	0.	660.
R15C1	751.60	73.8	0.	500.
R15C2	751.80	73.8	0.	540.
R15C3	752.00	73.8	0.	550.

TABLE 9.5.7 COMPLEX-I EXAMPLE INPUT UNIFORM TERRAIN (cont.)

R15C4	752.10	73.8	0.	575.
R15C5	752.18	73.8	0.	600.
R15C6	752.21	73.8	0.	625.
R15C7	752.23	73.8	0.	650.
R15C8	752.23	73.8	0.	660.
R16C1	751.60	73.9	0.	500.
R16C2	751.80	73.9	0.	540.
R16C3	752.00	73.9	0.	550.
R16C4	752.10	73.9	0.	575.
R16C5	752.18	73.9	0.	600.
R16C6	752.21	73.9	0.	625.
R16C7	752.23	73.9	0.	650.
R16C8	752.23	73.9	0.	660.
R17C1	751.60	74.0	0.	500.
R17C2	751.80	74.0	0.	540.
R17C3	752.00	74.0	0.	550.
R17C4	752.10	74.0	0.	575.
R17C5	752.18	74.0	0.	600.
R17C6	752.21	74.0	0.	625.
R17C7	752.23	74.0	0.	650.
R17C8	752.23	74.0	0.	660.
R18C1	751.60	74.1	0.	500.
R18C2	751.80	74.1	0.	540.
R18C3	752.00	74.1	0.	550.
R18C4	752.10	74.1	0.	575.
R18C5	752.18	74.1	0.	600.
R18C6	752.21	74.1	0.	625.
R18C7	752.23	74.1	0.	650.
R18C8	752.23	74.1	0.	660.
R19C1	751.60	74.2	0.	500.
R19C2	751.80	74.2	0.	540.
R19C3	752.00	74.2	0.	550.
R19C4	752.10	74.2	0.	575.
R19C5	752.18	74.2	0.	600.
R19C6	752.21	74.2	0.	625.
R19C7	752.23	74.2	0.	650.
R19C8	752.23	74.2	0.	660.
R20C1	751.60	74.3	0.	500.
R20C2	751.80	74.3	0.	540.
R20C3	752.00	74.3	0.	550.
R20C4	752.10	74.3	0.	575.
R20C5	752.18	74.3	0.	600.
R20C6	752.21	74.3	0.	625.
R20C7	752.23	74.3	0.	650.
R20C8	752.23	74.3	0.	660.
R21C1	751.60	74.4	0.	500.
R21C2	751.80	74.4	0.	540.
R21C3	752.00	74.4	0.	550.
R21C4	752.10	74.4	0.	575.
R21C5	752.18	74.4	0.	600.
R21C6	752.21	74.4	0.	625.
R21C7	752.23	74.4	0.	650.
R21C8	752.23	74.4	0.	660.
R22C1	751.60	74.5	0.	500.
R22C2	751.80	74.5	0.	540.
R22C3	752.00	74.5	0.	550.
R22C4	752.10	74.5	0.	575.
R22C5	752.18	74.5	0.	600.
R22C6	752.21	74.5	0.	625.
R22C7	752.23	74.5	0.	650.
R22C8	752.23	74.5	0.	660.

ENDREC

Table 9.5.8 COMPLEX-I EXAMPLE OUTPUT
UNIFORM TERRAIN (SELECTED PORTIONS)

FIVE HIGHEST 24-HOUR PARTCONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)
C-FLAG IDENTIFIES CONCENTRATIONS AFFECTED BY CALM HOURS

RECEPTOR	1		2		3		4		5	
1(751.60, 72.40)	56.45	(136,24)	42.31	(50,24)	40.60	(93,24)	31.21	(131,24)	28.71	(31,24)
2(751.80, 72.40)	88.08	(31,24)	69.81	(93,24)	53.71	(136,24)	52.09	(50,24)	45.42	(130,24)
3(752.00, 72.40)	80.50	(31,24)	57.15	(93,24)	48.71	(355,24)	47.43	(131,24)	46.90	(15,24)
4(752.10, 72.40)	146.31	(355,24)	136.27	(15,24)	111.21	(353,24)	99.54	(352,24)	96.42	(351,24)
5(752.18, 72.40)	175.96	(355,24)	149.44	(15,24)	131.51	(351,24)	124.35	(333,24)	124.16	(353,24)
6(752.21, 72.40)	164.18	(355,24)	137.21	(15,24)	122.05	(351,24)	114.51	(353,24)	114.39	(333,24)
7(752.23, 72.40)	152.37	(355,24)	126.23	(15,24)	113.61	(351,24)	105.27	(353,24)	105.23	(333,24)
8(752.23, 72.40)	148.16	(355,24)	122.55	(15,24)	110.73	(351,24)	102.20	(353,24)	102.19	(333,24)
9(751.60, 72.50)	43.63	(93,24)	37.81	(136,24)	30.52	(50,24)	29.41	(31,24)	27.05	(131,24)
10(751.80, 72.50)	69.61	(31,24)	59.17	(93,24)	43.54	(45,24)	42.39	(136,24)	42.01	(94,24)
11(752.00, 72.50)	74.42	(355,24)	57.68	(353,24)	55.76	(333,24)	53.88	(351,24)	51.87	(31,24)
12(752.10, 72.50)	170.47	(351,24)	147.90	(353,24)	140.93	(15,24)	126.27	(355,24)	116.34	(333,24)
13(752.18, 72.50)	162.78	(351,24)	154.60	(15,24)	152.77	(353,24)	128.96	(333,24)	126.25	(355,24)
14(752.21, 72.50)	149.16	(351,24)	141.81	(15,24)	140.61	(353,24)	118.51	(333,24)	118.49	(355,24)
15(752.23, 72.50)	137.00	(351,24)	130.39	(15,24)	129.17	(353,24)	110.27	(355,24)	108.94	(333,24)
16(752.23, 72.50)	132.95	(351,24)	126.59	(15,24)	125.40	(353,24)	107.30	(355,24)	105.80	(333,24)
17(751.60, 72.60)	30.01	(93,24)	26.04	(136,24)	19.60	(50,24)	19.10	(130,24)	18.30	(94,24)
18(751.80, 72.60)	40.53	(93,24)	38.77	(31,24)	37.60	(136,24)	35.80	(50,24)	35.62	(45,24)
19(752.00, 72.60)	71.54	(353,24)	64.37	(351,24)	59.83	(355,24)	56.68	(333,24)	48.15	(15,24)
20(752.10, 72.60)	170.03	(355,24)	168.65	(351,24)	152.91	(353,24)	145.34	(15,24)	134.27	(17,24)
21(752.18, 72.60)	191.04	(355,24)	167.97	(351,24)	157.88	(353,24)	137.65	(17,24)	133.31	(333,24)
22(752.21, 72.60)	177.72	(355,24)	153.76	(351,24)	145.17	(353,24)	126.06	(17,24)	122.39	(333,24)
23(752.23, 72.60)	164.59	(355,24)	141.14	(351,24)	133.28	(353,24)	115.76	(17,24)	112.43	(333,24)
24(752.23, 72.60)	160.01	(355,24)	136.97	(351,24)	129.39	(353,24)	112.36	(17,24)	109.19	(333,24)
25(751.60, 72.70)	19.91	(136,24)	18.76	(93,24)	17.45	(130,24)	17.14	(292,24)	16.75	(225,24)
26(751.80, 72.70)	41.76	(353,24)	34.96	(93,24)	34.59	(355,24)	33.83	(333,24)	31.67	(351,24)
27(752.00, 72.70)	89.91	(355,24)	72.68	(353,24)	67.18	(351,24)	66.76	(354,24)	57.50	(333,24)
28(752.10, 72.70)	199.96	(355,24)	176.91	(351,24)	138.16	(17,24)	132.66	(353,24)	128.22	(354,24)
29(752.18, 72.70)	196.51	(355,24)	177.83	(351,24)	141.51	(17,24)	137.29	(333,24)	136.88	(353,24)
30(752.21, 72.70)	182.64	(355,24)	129.48	(17,24)	126.59	(357,24)	125.93	(333,24)	125.87	(353,24)
31(752.23, 72.70)	169.05	(355,24)	155.06	(357,24)	118.84	(17,24)	116.54	(351,24)	115.61	(333,24)
32(752.23, 72.70)	164.34	(355,24)	151.18	(357,24)	115.35	(17,24)	113.39	(351,24)	112.28	(333,24)
33(751.60, 72.80)	19.27C	(75,24)	15.77	(93,24)	14.82	(275,24)	14.21	(116,24)	13.81	(292,24)
34(751.80, 72.80)	51.12	(355,24)	42.09	(354,24)	36.15	(357,24)	33.90	(344,24)	33.86	(333,24)
35(752.00, 72.80)	91.11	(355,24)	75.35	(357,24)	67.83	(354,24)	60.47	(353,24)	58.18	(333,24)
36(752.10, 72.80)	183.43	(355,24)	155.23	(354,24)	153.93	(357,24)	141.60	(17,24)	136.05	(353,24)
37(752.18, 72.80)	181.34	(357,24)	181.17	(355,24)	150.80	(354,24)	144.90	(17,24)	140.31	(353,24)
38(752.21, 72.80)	238.82	(355,24)	170.82	(357,24)	137.59	(354,24)	132.48	(17,24)	128.93	(353,24)
39(752.23, 72.80)	220.56	(355,24)	158.66	(357,24)	126.04	(354,24)	121.54	(17,24)	118.24	(353,24)
40(752.23, 72.80)	214.39	(355,24)	154.68	(357,24)	122.33	(354,24)	117.96	(17,24)	114.79	(353,24)
41(751.60, 72.90)	17.12	(225,24)	14.43	(275,24)	14.29	(150,24)	12.72	(103,24)	11.93	(270,24)
42(751.80, 72.90)	51.92	(355,24)	50.76	(354,24)	48.00	(357,24)	34.02	(344,24)	33.36	(353,24)
43(752.00, 72.90)	119.34	(355,24)	75.99	(357,24)	68.35	(354,24)	61.12	(353,24)	50.14	(4,24)
44(752.10, 72.90)	216.50	(355,24)	156.84	(357,24)	144.45	(17,24)	138.88	(353,24)	133.87	(4,24)
45(752.18, 72.90)	223.78	(355,24)	184.95	(357,24)	147.71	(17,24)	143.17	(353,24)	124.49	(4,24)
46(752.21, 72.90)	205.03	(355,24)	174.11	(357,24)	134.97	(17,24)	131.46	(353,24)	113.64	(4,24)
47(752.23, 72.90)	187.93	(355,24)	161.63	(357,24)	123.76	(17,24)	120.51	(353,24)	109.89	(22,24)
48(752.23, 72.90)	182.46	(355,24)	157.58	(357,24)	120.13	(17,24)	117.00	(353,24)	110.94	(22,24)
49(751.60, 73.00)	26.37	(150,24)	17.04	(225,24)	11.80	(243,24)	11.43	(262,24)	10.27	(149,24)
50(751.80, 73.00)	58.61	(355,24)	47.96	(357,24)	34.13	(354,24)	33.77	(6,24)	33.38	(353,24)

Table 9.5.8 COMPLEX-I EXAMPLE OUTPUT (cont.)

51(752.00, 73.00)	101.23	(355,24)	76.47	(357,24)	56.59	(6,24)	52.63	(354,24)	50.53	(4,24)
52(752.10, 73.00)	193.43	(355,24)	146.63	(17,24)	136.77	(333,24)	135.99	(4,24)	134.88	(351,24)
53(752.18, 73.00)	199.89	(355,24)	155.99	(357,24)	151.99	(342,24)	149.84	(17,24)	146.55C	(335,24)
54(752.21, 73.00)	183.15	(355,24)	147.66	(357,24)	140.35	(342,24)	139.19C	(335,24)	136.85	(17,24)
55(752.23, 73.00)	167.83	(355,24)	137.36	(357,24)	128.76	(342,24)	127.93C	(335,24)	125.45	(17,24)
56(752.23, 73.00)	162.94	(355,24)	134.01	(357,24)	125.08	(342,24)	124.36C	(335,24)	121.77	(17,24)
57(751.60, 73.10)	31.61	(150,24)	14.22	(144,24)	12.05	(274,24)	11.70	(243,24)	11.28	(262,24)
58(751.80, 73.10)	50.08	(355,24)	43.90C	(341,24)	37.46	(150,24)	35.09	(351,24)	34.20	(354,24)
59(752.00, 73.10)	74.75	(355,24)	73.34C	(341,24)	65.07	(320,24)	64.56	(333,24)	59.11	(351,24)
60(752.10, 73.10)	168.66	(355,24)	155.11C	(341,24)	150.37	(333,24)	148.03	(320,24)	132.03	(342,24)
61(752.18, 73.10)	174.24	(355,24)	154.06C	(335,24)	153.48	(342,24)	152.91C	(341,24)	144.02	(333,24)
62(752.21, 73.10)	159.72	(355,24)	141.69C	(335,24)	141.68	(342,24)	139.37C	(341,24)	131.82	(212,24)
63(752.23, 73.10)	146.34	(355,24)	130.04C	(335,24)	129.95	(342,24)	127.60C	(341,24)	124.35	(212,24)
64(752.23, 73.10)	142.07	(355,24)	126.33C	(335,24)	126.23	(342,24)	123.86C	(341,24)	122.40	(212,24)
65(751.60, 73.20)	31.64	(150,24)	16.18	(122,24)	11.95	(274,24)	11.66	(243,24)	10.86	(238,24)
66(751.80, 73.20)	50.22	(342,24)	50.05	(6,24)	43.92C	(341,24)	42.61C	(335,24)	41.53	(355,24)
67(752.00, 73.20)	91.20	(6,24)	89.41	(342,24)	77.00C	(335,24)	74.91	(355,24)	73.52C	(341,24)
68(752.10, 73.20)	209.47	(6,24)	198.72C	(335,24)	197.12	(342,24)	188.74	(257,24)	169.36	(355,24)
69(752.18, 73.20)	251.84C	(335,24)	215.28	(342,24)	196.12	(6,24)	189.65	(257,24)	169.70C	(336,24)
70(752.21, 73.20)	232.58C	(335,24)	197.97	(342,24)	178.74	(6,24)	173.05	(257,24)	155.93C	(336,24)
71(752.23, 73.20)	213.51C	(335,24)	181.45	(342,24)	163.59	(6,24)	158.55	(257,24)	143.00C	(336,24)
72(752.23, 73.20)	207.46C	(335,24)	176.20	(342,24)	158.74	(6,24)	153.89	(257,24)	138.90C	(336,24)
73(751.60, 73.30)	24.76	(150,24)	16.11	(122,24)	11.99	(274,24)	10.81	(238,24)	10.61	(147,24)
74(751.80, 73.30)	58.61	(342,24)	53.73	(279,24)	52.04C	(341,24)	50.04	(6,24)	49.71	(314,24)
75(752.00, 73.30)	91.11	(6,24)	89.24	(342,24)	84.67	(320,24)	82.95	(279,24)	77.57	(314,24)
76(752.10, 73.30)	228.20	(342,24)	209.08	(6,24)	198.41C	(335,24)	190.28	(320,24)	188.41	(257,24)
77(752.18, 73.30)	252.95	(342,24) *	251.41C	(335,24)	195.78	(6,24)	193.39	(314,24)	189.33	(257,24)
78(752.21, 73.30)	232.54	(342,24)	232.20C	(335,24)	182.71	(314,24)	178.44	(6,24)	172.78	(257,24)
79(752.23, 73.30)	213.17C	(335,24)	213.16	(342,24)	169.07	(314,24)	163.32	(6,24)	158.30	(257,24)
80(752.23, 73.30)	207.12C	(335,24)	207.01	(342,24)	164.82	(314,24)	158.49	(6,24)	153.65	(257,24)
81(751.60, 73.40)	15.62	(122,24)	11.82	(144,24)	10.54	(274,24)	10.32	(147,24)	10.24	(175,24)
82(751.80, 73.40)	58.68	(342,24)	54.14	(320,24)	53.61	(279,24)	52.26	(309,24)	52.00C	(341,24)
83(752.00, 73.40)	106.03	(342,24)	101.08	(320,24)	90.72C	(341,24)	82.57	(279,24)	81.25	(6,24)
84(752.10, 73.40)	236.50	(342,24)	222.57	(320,24)	205.43C	(341,24)	201.52	(5,24)	197.08C	(335,24)
85(752.18, 73.40)	249.56C	(335,24)	244.33	(342,24)	215.05	(314,24)	202.51C	(341,24)	181.49	(351,24)
86(752.21, 73.40)	230.55C	(335,24)	223.83	(342,24)	209.38	(314,24)	184.68C	(341,24)	170.05	(351,24)
87(752.23, 73.40)	211.69C	(335,24)	205.08	(342,24)	195.68	(314,24)	169.14C	(341,24)	155.94	(351,24)
88(752.23, 73.40)	205.69C	(335,24)	199.10	(342,24)	191.27	(314,24)	164.17C	(341,24)	151.47	(351,24)
89(751.60, 73.50)	15.68	(225,24)	15.33	(122,24)	13.12	(130,24)	11.70	(142,24)	10.41	(271,24)
90(751.80, 73.50)	69.90	(309,24)	54.40	(320,24)	51.87	(291,24)	50.78	(7,24)	50.48	(18,24)
91(752.00, 73.50)	115.07	(320,24)	114.27	(309,24)	105.06	(342,24)	90.07C	(341,24)	87.16C	(63,24)
92(752.10, 73.50)	254.17	(320,24)	231.53	(342,24)	221.57	(309,24)	202.65C	(341,24)	198.76	(5,24)
93(752.18, 73.50)	237.90	(342,24)	213.31	(320,24)	211.73C	(313,24)	204.22	(314,24)	199.89C	(341,24)
94(752.21, 73.50)	227.70C	(335,24)	218.04	(342,24)	201.34	(320,24)	198.23C	(313,24)	196.74	(314,24)
95(752.23, 73.50)	209.13C	(335,24)	199.82	(342,24)	187.04	(320,24)	183.36	(314,24)	183.32C	(313,24)
96(752.23, 73.50)	203.20C	(335,24)	193.98	(342,24)	182.09	(320,24)	179.00	(314,24)	178.35C	(313,24)
97(751.60, 73.60)	26.68	(130,24)	19.14	(226,24)	15.92	(225,24)	13.01	(142,24)	10.93	(234,24)
98(751.80, 73.60)	69.61	(309,24)	63.52C	(63,24)	59.83	(1,24)	56.83	(47,24)	52.23	(7,24)
99(752.00, 73.60)	113.05	(309,24)	90.66	(291,24)	87.95	(18,24)	84.21	(7,24)	83.73	(224,24)
100(752.10, 73.60)	217.36	(309,24)	194.81	(291,24)	193.44	(18,24)	173.71	(7,24)	173.04	(224,24)

Table 9.5.8 COMPLEX-I EXAMPLE OUTPUT (cont.)

101(752.18, 73.60)		222.38 (320,24)	206.57 (309,24)	203.26 (18,24)	179.06 (5,24)	177.73 (291,24)
102(752.21, 73.60)		210.39 (320,24)	188.39 (309,24)	186.36 (18,24)	165.30 (314,24)	163.45 (5,24)
103(752.23, 73.60)		195.51 (320,24)	172.49 (309,24)	170.90 (18,24)	154.55 (314,24)	149.72 (5,24)
104(752.23, 73.60)		190.38 (320,24)	167.39 (309,24)	165.93 (18,24)	151.01 (314,24)	145.27 (5,24)
105(751.60, 73.70)		19.06 (130,24)	18.64 (226,24)	17.97 (234,24)	16.47 (195,24)	16.19 (225,24)
106(751.80, 73.70)		72.02 (1,24)	63.34C (63,24)	60.73 (309,24)	60.63 (308,24)	58.73 (46,24)
107(752.00, 73.70)		111.57 (1,24)	111.35 (309,24)	90.46 (47,24)	89.65C (63,24)	89.37 (18,24)
108(752.10, 73.70)		211.97 (309,24)	207.58 (1,24)	193.16 (18,24)	182.79 (47,24)	179.70 (342,24)
109(752.18, 73.70)		209.51 (1,24)	201.74 (309,24)	198.59 (18,24)	186.33C (63,24)	179.20 (342,24)
110(752.21, 73.70)		194.31 (1,24)	184.59C (335,24)	184.12 (309,24)	182.22 (18,24)	177.77C (63,24)
111(752.23, 73.70)		178.86 (1,24)	169.71C (335,24)	168.67 (309,24)	167.18 (18,24)	166.68C (63,24)
112(752.23, 73.70)		173.89 (1,24)	164.90C (335,24)	163.68 (309,24)	163.02C (63,24)	162.32 (18,24)
113(751.60, 73.80)		23.97 (141,24)	18.74 (130,24)	18.11 (234,24)	17.46 (226,24)	16.44 (195,24)
114(751.80, 73.80)		79.48 (1,24)	68.85C (63,24)	66.66 (104,24)	65.51 (289,24)	61.98 (2,24)
115(752.00, 73.80)		114.83 (1,24)	102.87C (63,24)	92.87 (46,24)	92.59 (309,24)	90.55 (300,24)
116(752.10, 73.80)		240.13 (300,24)	231.47 (1,24)	190.95 (46,24)	180.70 (308,24)	169.64 (309,24)
117(752.18, 73.80)		237.06 (300,24)	226.05 (1,24)	200.44 (46,24)	199.51 (18,24)	187.67 (309,24)
118(752.21, 73.80)		209.50 (1,24)	186.30 (18,24)	185.77 (300,24)	173.25C (63,24)	171.44 (309,24)
119(752.23, 73.80)		192.87 (1,24)	182.80 (309,24)	172.55 (47,24)	172.43 (18,24)	172.21 (300,24)
120(752.23, 73.80)		187.49 (1,24)	177.40 (309,24)	168.05 (47,24)	167.87 (300,24)	167.69 (18,24)
121(751.60, 73.90)		25.74 (195,24)	22.89 (141,24)	18.17 (234,24)	18.16 (225,24)	17.11 (83,24)
122(751.80, 73.90)		74.61 (104,24)	69.22 (301,24)	66.23 (53,24)	65.43 (300,24)	64.08 (15,24)
123(752.00, 73.90)		112.87 (1,24)	110.52 (104,24)	101.86 (289,24)	98.40 (300,24)	97.43 (301,24)
124(752.10, 73.90)		233.23 (300,24)	224.26 (1,24)	200.00 (104,24)	187.98 (47,24)	184.90 (46,24)
125(752.18, 73.90)		230.08 (300,24)	227.98 (1,24)	218.98C (63,24)	205.69 (47,24)	194.14 (46,24)
126(752.21, 73.90)		212.00 (1,24)	208.31C (63,24)	178.42 (46,24)	172.83 (300,24)	160.67 (364,24)
127(752.23, 73.90)		195.90 (1,24)	194.84C (63,24)	163.87 (46,24)	160.33 (300,24)	150.02 (364,24)
128(752.23, 73.90)		190.67 (1,24)	190.35C (63,24)	159.11 (46,24)	156.31 (300,24)	146.66 (364,24)
129(751.60, 74.00)		34.37 (195,24)	23.51 (83,24)	21.06 (141,24)	20.09 (324,24)	18.27 (90,24)
130(751.80, 74.00)		77.61 (2,24)	74.25 (53,24)	74.04 (104,24)	65.81 (15,24)	64.96 (300,24)
131(752.00, 74.00)		119.88 (104,24)	114.98 (53,24)	113.50 (13,24)	108.96 (300,24)	107.95 (301,24)
132(752.10, 74.00)		220.00 (104,24)	217.42 (300,24)	211.84 (1,24)	202.46 (2,24)	201.21 (288,24)
133(752.18, 74.00)	*	262.25 (1,24)	215.50 (104,24)	214.37 (300,24)	206.13 (2,24)	203.08C (63,24)
134(752.21, 74.00)		205.09 (1,24)	197.53 (104,24)	197.49 (300,24)	194.28C (63,24)	184.67 (47,24)
135(752.23, 74.00)		189.65 (1,24)	182.60C (63,24)	182.46 (300,24)	181.40 (104,24)	170.84 (47,24)
136(752.23, 74.00)		184.59 (1,24)	178.69C (63,24)	177.51 (300,24)	176.06 (104,24)	166.33 (47,24)
137(751.60, 74.10)		38.93 (195,24)	27.23 (83,24)	23.63 (324,24)	21.11 (141,24)	20.33 (317,24)
138(751.80, 74.10)		73.15 (104,24)	65.41 (15,24)	64.27 (13,24)	59.72 (243,24)	58.09 (300,24)
139(752.00, 74.10)		117.15 (104,24)	110.89 (13,24)	110.50 (2,24)	110.11 (300,24)	108.65 (53,24)
140(752.10, 74.10)		236.74 (53,24)	234.32 (13,24)	230.20 (104,24)	229.84 (300,24)	206.70C (52,24)
141(752.18, 74.10)		232.49 (53,24)	226.64 (300,24)	225.21 (104,24)	221.04 (13,24)	200.53 (165,24)
142(752.21, 74.10)		213.21 (53,24)	206.61 (104,24)	190.64 (300,24)	186.18C (54,24)	185.76 (165,24)
143(752.23, 74.10)		195.93 (53,24)	189.86 (104,24)	176.23 (300,24)	174.35 (1,24)	174.28C (54,24)
144(752.23, 74.10)		190.13 (53,24)	184.27 (104,24)	171.44 (300,24)	169.99C (54,24)	169.47 (1,24)
145(751.60, 74.20)		44.31 (195,24)	30.56 (108,24)	30.53 (83,24)	29.93 (317,24)	28.54 (120,24)
146(751.80, 74.20)		72.38 (104,24)	65.93 (300,24)	63.74 (13,24)	62.56 (347,24)	57.51 (245,24)
147(752.00, 74.20)		119.84 (300,24)	113.75 (104,24)	108.27 (13,24)	98.44 (347,24)	95.56 (2,24)
148(752.10, 74.20)		234.40 (2,24)	231.36 (53,24)	230.61 (300,24)	224.76 (13,24)	220.78 (104,24)
149(752.18, 74.20)		225.55 (300,24)	216.29 (104,24)	212.46 (13,24)	212.26 (165,24)	203.62 (364,24)
150(752.21, 74.20)		225.51 (300,24)	205.18 (53,24)	198.64 (104,24)	196.59 (165,24)	194.99 (13,24)

Table 9.5.8 COMPLEX-I EXAMPLE OUTPUT (cont.)

151(752.23,	74.20)	208.32	(300,24)	188.68	(53,24)	182.66	(104,24)	182.49	(165,24)	179.24	(13,24)
152(752.23,	74.20)	202.55	(300,24)	183.09	(53,24)	177.78	(165,24)	177.28	(104,24)	173.91	(13,24)
153(751.60,	74.30)	36.43	(108,24)	36.15	(195,24)	27.56	(120,24)	26.78	(83,24)	25.74	(196,24)
154(751.80,	74.30)	71.52	(104,24)	58.88	(364,24)	57.09	(195,24)	56.89	(245,24)	54.99	(147,24)
155(752.00,	74.30)	110.80	(104,24)	105.58	(13,24)	95.24	(300,24)	84.03	(347,24)	83.83C	(52,24)
156(752.10,	74.30)	241.54	(300,24)	215.19	(13,24)	209.83	(104,24)	184.67	(2,24)	174.40C	(52,24)
157(752.18,	74.30)	223.57	(104,24)	220.59	(53,24)	216.59	(300,24)	203.84	(13,24)	183.38	(2,24)
158(752.21,	74.30)	202.71	(53,24)	199.92	(300,24)	190.60	(104,24)	187.26	(13,24)	169.86	(2,24)
159(752.23,	74.30)	186.53	(53,24)	184.86	(300,24)	175.39	(104,24)	172.25	(13,24)	157.70	(2,24)
160(752.23,	74.30)	181.03	(53,24)	179.76	(300,24)	170.22	(104,24)	167.13	(13,24)	153.62	(2,24)
161(751.60,	74.40)	36.17	(108,24)	32.75	(196,24)	30.99	(195,24)	26.53	(120,24)	26.03	(324,24)
162(751.80,	74.40)	54.75	(104,24)	54.67	(195,24)	54.29	(147,24)	50.90	(317,24)	50.06	(83,24)
163(752.00,	74.40)	107.81	(104,24)	107.67	(300,24)	102.85	(13,24)	91.64	(347,24)	91.36	(21,24)
164(752.10,	74.40)	224.52	(300,24)	205.74	(13,24)	200.57	(104,24)	183.47	(21,24)	167.11C	(52,24)
165(752.18,	74.40)	196.50	(104,24)	195.27	(13,24)	191.52	(300,24)	166.76C	(52,24)	166.42	(15,24)
166(752.21,	74.40)	210.16	(300,24)	180.84	(104,24)	179.57	(13,24)	162.92	(2,24)	158.07	(15,24)
167(752.23,	74.40)	194.35	(300,24)	166.51	(104,24)	165.28	(13,24)	151.33	(2,24)	147.73	(15,24)
168(752.23,	74.40)	188.96	(300,24)	161.60	(104,24)	160.37	(13,24)	147.41	(2,24)	144.31	(15,24)
169(751.60,	74.50)	36.54	(196,24)	35.33	(108,24)	30.06	(195,24)	28.51	(324,24)	26.75	(317,24)
170(751.80,	74.50)	53.40	(187,24)	52.42	(286,24)	52.15	(108,24)	50.10	(199,24)	49.08	(239,24)
171(752.00,	74.50)	93.97	(104,24)	80.32	(299,24)	79.68	(245,24)	78.24	(347,24)	76.47	(147,24)
172(752.10,	74.50)	214.64	(300,24)	191.53	(104,24)	179.71	(13,24)	175.19	(21,24)	159.70	(299,24)
173(752.18,	74.50)	211.21	(300,24)	187.85	(104,24)	186.85	(13,24)	163.63	(21,24)	158.95	(364,24)
174(752.21,	74.50)	194.59	(300,24)	173.12	(104,24)	172.07	(13,24)	150.66	(21,24)	149.01	(364,24)
175(752.23,	74.50)	179.36	(300,24)	159.56	(104,24)	158.54	(13,24)	138.78	(21,24)	138.06	(364,24)
176(752.23,	74.50)	174.06	(300,24)	154.86	(104,24)	153.82	(13,24)	134.64	(21,24)	134.34C	(52,24)

9.6 Third-Level Screening Techniques

I. Third-level Screening Techniques

A. EPA Recommendations

1. Use RTDM (rural only)

2. Wind data should be from the lesser of stack-top or 100 meters, or at plume height using remote sensing.

3. Use preferred screening options in RTDM.

4. Analyze plume height relative to critical dividing streamline.

B. Critical Dividing Streamline

1. Defined as

$$H_{crit} = H\ (1\text{-}F_r)$$

where

H = height of terrain obstacle above stack

F_r = the Froude number

2. H_{crit} equals 0 for unstable and neutral -- plume follows terrain in RTDM.

3. $H_{crit} > 0$ under stable conditions -- plume $< H_{crit}$ impacts terrain.

II. Summary

III. Questions

9.7 Demonstration of Third-Level Screening

I. Third-level Screening Using RTDM

A. Major RTDM Features

1. Allows on-site meteorological data (On-site data at 10 m and stack height are required for regulatory applications.)

2. Terrain entered as distances to contour levels.

B. Model Input and Output (the following example is from the RTDM user's guide)

1. Sample input data -- Table 9.7.1

2. Sample meteorological data file -- Table 9.7.2

3. Sample output list file -- Table 9.7.3

C. Postprocessor Input and Output

1. Sample input stream file -- Table 9.7.4

2. Sample postprocessor output -- Table 9.7.5

II. Summary

III. Questions

III. Questions

Table 9.7.1 RTDM INPUT DATA FILE EXAMPLE

```
PARAMETERS
PR003   1.
PR004   10.0                0.      0.
PR022   1.
PR018   1.
PR019   1.
PR020   1.      .17
PR021   1.
PR023   1.
        22.5    22.5    22.5    22.5    22.5    22.5
PR025   1.
99999
STACKS
600.      800.      765.      SO2
STK1      121.92    5.0       20.0      370.      1000.
99999
POINTS
          603.16    801.61    2782.     WEST MT.
          602.75    799.90    2430.     BRUSH MT.
          603.46    799.41    2520.     WALKER MT.
          600.53    800.63    1100.
          600.64    800.76    1200.
          600.80    800.96    1300.
          600.85    801.01    1400.
          600.96    801.14    1500.
          601.09    801.30    1600.
          601.31    801.56    1700.
          601.43    801.70    1800.
          601.61    801.92    1900.
          601.84    802.19    2000.
          603.59    804.27    2100.
          603.70    804.40    2200.
          603.89    804.63    2300.
          603.93    804.68    2400.
          603.96    804.72    2500.
          603.98    804.74    2600.
          603.99    804.76    2700.
          604.00    804.77    2800.
          604.03    804.80    2900.
          604.04    804.82    3000.     TUMBLEDOWN MT.
          603.35    793.70    1631.     BUNKER MT.
          598.10    798.23    2440.     RECORD HILL
          596.53    799.26    2440.     OLD TURK MT.
99999
TERRAIN
1100.     100.
010       4.46   4.78   5.01   7.00   7.38   -999.

020       1.50   3.35   3.45   3.75   3.85   3.95   4.05   4.20   4.60   4.70
          4.80   -999.
030       1.40   1.50   1.65   3.00   3.10   3.16   3.24   3.31   3.50   -999.

040       1.28   1.40   1.46   1.53   1.61   1.74   1.88   1.98   2.72   -999.

050       1.15   1.30   1.39   1.49   1.60   1.69   1.75   1.82   1.94   2.06
          2.13   2.22   2.34   -999.
060       1.18   1.29   1.40   1.48   1.58   1.69   1.80   1.94   2.10   2.24
          2.58   -999.
070       1.25   1.47   1.60   1.72   1.87   2.03   2.20   2.32   2.47   -999.

080       1.41   1.58   1.70   1.87   2.00   2.12   2.24   2.38   2.44   2.49
          2.59   -999.
090       1.64   1.75   1.88   1.99   2.09   2.20   2.39   2.59   2.76   2.94
          3.08   -999.
100       1.99   2.09   2.18   2.30   2.52   2.59   2.66   2.71   2.81   2.95
```

```
             3.09    3.18    3.29    -999.
110          2.02    2.28    2.40    2.52    2.63    2.72    3.00    3.19    3.55    -999.

120          2.21    2.41    2.52    2.63    5.75    5.90    6.01    6.18    6.30    6.50
             6.73    6.85    7.07    -999.
130          2.75    5.47    5.62    5.92    6.01    6.70    6.90    7.37    7.48    7.79
             -999.
140          1.22    1.29    6.70    6.80    6.90    7.00    -999.

150          1.11    1.19    1.24    1.29    1.32    -999.

160          1.08    1.15    1.21    1.28    1.38    1.42    5.13    5.32    5.51    -999.

170          1.01    1.12    1.23    1.34    1.48    1.53    4.98    -999.

180          0.81    1.04    1.18    1.38    1.51    1.66    1.82    2.10    2.23    2.31
             4.79    4.92    5.05    -999.
190          0.79    0.90    1.07    1.23    1.37    1.50    1.71    1.81    1.91    2.01
             -999.
200          0.68    0.82    1.00    1.16    1.30    1.50    1.68    1.95    2.52    -999.

210          0.71    0.83    1.03    1.20    1.43    1.58    1.81    2.15    2.30    2.52
             2.62    2.73    -999.
220          0.82    0.99    1.25    1.32    1.49    1.70    2.04    2.22    2.50    2.86
             5.58    5.75    6.05    6.11    6.16    6.19    6.21    6.23    6.27    6.29
230          1.05    1.21    1.48    1.61    2.02    2.17    2.28    2.42    2.54    2.67
             2.84    3.01    3.17    3.21    3.28    3.32    7.42    7.49    -999.
240          1.05    1.20    1.41    1.61    1.78    1.90    2.04    2.16    2.38    2.52
             2.68    2.80    2.91    3.14    3.31    3.39    3.45    -999.
250          1.00    1.23    1.31    1.40    1.56    1.70    1.86    1.97    2.08    2.17
             2.30    2.45    2.57    2.80    -999.
260          1.00    1.11    1.27    1.36    1.49    1.60    1.78    2.09    2.27    2.45
             2.56    2.63    2.73    2.84    -999.
270          1.03    1.16    1.28    1.38    1.48    1.53    1.66    1.73    1.88    2.09
             2.26    2.49    2.61    -999.
280          1.09    1.22    1.34    1.43    1.54    1.63    1.71    1.76    1.82    1.89
             1.97    2.10    3.50    3.58    3.70    -999.
290          1.16    1.28    1.43    1.57    1.67    1.76    1.83    1.98    2.13    3.26
             3.34    3.50    3.65    3.79    3.90    4.05    -999.
300          1.28    1.41    1.60    1.74    1.89    2.10    2.90    3.01    3.16    3.24
             3.33    3.96    4.03    4.17    -999.
310          1.46    1.60    1.75    1.90    2.90    3.04    3.42    3.59    3.75    3.90
             3.98    4.08    4.20    8.25    8.35    -999.
320          1.65    1.85    2.00    3.12    3.36    3.49    4.05    4.20    4.42    8.55
             8.65    -999.
330          2.18    2.97    4.42    4.61    4.78    -999.

340          6.23    6.42    6.58    -999.

350          4.69    4.90    -999.

360          4.31    6.80    -999.

99999
EXECUTE
         220.   5.0    3000. 4.     68.    0.08   0.06   0.0    0.0    0.20   0.14  10.
ENDJOB
```

Table 9.7.2 RTDM INPUT MET DATA FILE EXAMPLE

7636524	220.	1.0	3000.	1.	68.	0.22	0.20	0.0	0.0	0.1	.09	2.0
7636604	220.	3.0	1000.	1.	68.	0.22	0.20	0.0	0.0	0.1	-.09	6.0
7636609	220.	2.0	3000.	2.	68.	0.16	0.12	0.0	0.0	0.12	.11	4.0
7636612	220.	4.0	700.	2.	68.	0.16	0.12	0.0	0.0	0.12	-.11	7.0
7636614	220.	2.0	3000.	3.	68.	0.11	0.08	0.0	0.0	0.15	.12	4.0
7636619	220.	7.0	550.	3.	68.	0.11	0.08	0.0	0.0	0.15	-.12	14.0
7700105	220.	3.0	1000.	4.	68.	0.08	0.06	0.0	0.0	0.20	.14	6.0
7700111	220.	15.	450.	4.	68.	0.08	0.06	0.0	0.0	0.20	-.14	30.0
7700113	220.	2.0	3000.	5.	68.	0.06	0.03	0.02	0.02	0.30	.20	5.0
7700116	220.	4.0	700.	5.	68.	0.06	0.03	0.003	0.005	0.30	-.20	10.0
7700119	220.	2.5	2000.	6.	68.	0.04	0.016	0.006	0.02	0.40	0.30	7.0
7700122	220.	4.0	650.	6.	68.	0.04	0.016	0.04	0.006	0.40	-.30	12.0

Table 9.7.3 RTDM MODEL OUTPUT EXAMPLE

```
ROUGH TERRAIN DIFFUSION MODEL   VERSION 3.2   LEVEL 861130                        PAGE   1

      MODEL PARAMETERS:

      PR001:  HORIZONTAL SCALE IS 1000.000 METERS PER USER UNIT

      PR002:  VERTICAL SCALE IS     .305 METERS PER USER UNIT

      PR003:  WIND SPEED SCALE IS    1.000 M/SEC PER USER UNIT

      PR004:  ANEMOMETER #1 HEIGHT ABOVE ZA (USED FOR PLUME RISE) IS  10.0 M
              IF AVAILABLE, ANEMOMETER #2 HEIGHT ABOVE ZA (USED FOR PLUME DILUTION) IS    .0 M
              DILUTION WIND SPEED OPTION IS 0      (IF 0, ONE WIND SPEED--AT STACK HEIGHT--IS USED FOR PLUME RISE AND DILUTION
              IF 1, WIND SPEED AT LEVEL #1 IS EXTRAPOLATED TO STACK-TOP HEIGHT FOR PLUME RISE AND TO PLUME HEIGHT FOR DILUTION
              IF 2, WIND SPEED AT LEVEL #1 IS EXTRAPOLATED TO STACK-TOP HEIGHT FOR PLUME RISE,
              AND THE SPEED AT LEVEL #2 IS EXTRAPOLATED TO PLUME HEIGHT FOR DILUTION)
              ZA (HEIGHT IN METERS ABOVE STACK BASE ELEVATION WHERE THE WIND SPEED PROFILE IS ASSUMED TO ORIGINATE) =     .000

      PR005:  DEFAULT WIND SPEED PROFILE EXPONENTS AS A FUNCTION OF STABILITY CLASS (1-6, RESPECTIVELY):
                              .0900   .1100   .1200   .1400   .2000   .3000

      PR006:  DISPERSION COEFFICIENTS ARE BRIGGS RURAL/ASME-1979 (UNLESS REPLACED BY ON-SITE TURBULENCE DATA).

      PR009:  PARTIAL PLUME PENETRATION OF MIXING LIDS IS NOT BEING USED.

      PR010:  BUOYANCY-ENHANCED PLUME DISPERSION IS USED; PARAMETER ALPHA IS    3.162

      PR011:  UNLIMITED MIXING HEIGHT USED FOR STABLE CONDITIONS

      PR012:  TRANSITIONAL PLUME RISE IS USED.

      PR013:  PLUME PATH COEFFICIENTS FOR STABILITY CLASSES 1-6:   .500  .500  .500  .500  .500  .500

      PR014:  DEFAULT VERTICAL POTENTIAL TEMPERATURE GRADIENTS USED FOR STABLE PLUME RISE (CLASSES 5 & 6):   .0200  .0350

      PR015:  STACK-TIP DOWNWASH IS NOT USED.

      PR016:  Y-COMPONENT TURBULENCE INTENSITY VALUES ARE NOT PROVIDED; STABILITY CLASS IS USED TO OBTAIN SIGMA-Y.

      PR017:  Z-COMPONENT TURBULENCE INTENSITY VALUES ARE NOT PROVIDED; STABILITY CLASS IS USED TO OBTAIN SIGMA-Z.

      PR018:  HOURLY VERTICAL POTENTIAL TEMPERATURE GRADIENTS ARE PROVIDED FOR COMPUTING STABLE PLUME RISE.

      PR019:  HOURLY VERTICAL POTENTIAL TEMPERATURE GRADIENTS ARE PROVIDED FOR COMPUTING HCRIT.

      PR020:  WIND DIRECTION SHEAR IS USED IN COMPUTATION OF SIGMA-Y; COEFFICIENT =   .17

      PR021:  HOURLY VALUES OF WIND SPEED PROFILE EXPONENT ARE PROVIDED.

      PR022:  PARTIAL REFLECTION ALGORITHM IS BEING USED; KEYWORD TERRAIN MUST BE USED TO READ IN TERRAIN.

      PR023:  OFF-CENTERLINE CONCENTRATIONS ARE COMPUTED FOR ALL STABILITIES; NO SECTOR AVERAGING IS USED.

      PR024:  HOURLY EMISSIONS DATA ARE NOT AVAILABLE; CONSTANT VALUES SPECIFIED IN THE STACKS SECTION ARE USED.

      PR025:  DETAILED INFORMATION ABOUT EACH CASE WILL BE PRINTED.
```

Table 9.7.3 RTDM MODEL OUTPUT EXAMPLE (cont.)

ROUGH TERRAIN DIFFUSION MODEL VERSION 3.2 LEVEL 861130 PAGE 2

MODELED STACK PARAMETERS:

X,Y COORDINATE OF ALL SOURCES (USER UNITS) IS (600.00 , 800.00) OR (600000.00 , 800000.00) METERS
BASE HEIGHT OF ALL SOURCES (USER UNITS) IS 765.000 OR 233.172 METERS
POLLUTANT IS SO2

CODE	NAME	STACK HT (M)	DIAMETER (M)	EXIT VEL (M/SEC)	STACK TEMP (K)	EMISSION RATE (G/SEC)
1	STK1	121.920	5.000	20.000	370.000	1000.000

1 ROUGH TERRAIN DIFFUSION MODEL VERSION 3.2 LEVEL 861130 PAGE 3

RECEPTOR POINT INFORMATION (ALL COORDINATES IN USER UNITS):

RECEPTOR	X-COORD	Y-COORD	HEIGHT	NAME
1	603.16	801.61	2782.00**	WEST MT.
2	602.75	799.90	2430.00**	BRUSH MT.
3	603.46	799.41	2520.00**	WALKER MT.
4	600.53	800.63	1100.00	
5	600.64	800.76	1200.00**	
6	600.80	800.96	1300.00**	
7	600.85	801.01	1400.00**	
8	600.96	801.14	1500.00**	
9	601.09	801.30	1600.00**	
10	601.31	801.56	1700.00**	
11	601.43	801.70	1800.00**	
12	601.61	801.92	1900.00**	
13	601.84	802.19	2000.00**	
14	603.59	804.27	2100.00**	
15	603.70	804.40	2200.00**	
16	603.89	804.63	2300.00**	
17	603.93	804.68	2400.00**	
18	603.96	804.72	2500.00**	
19	603.98	804.74	2600.00**	
20	603.99	804.76	2700.00**	
21	604.00	804.77	2800.00**	
22	604.03	804.80	2900.00**	
23	604.04	804.82	3000.00**	TUMBLEDOWN MT.
24	603.35	793.70	1631.00**	BUNKER MT.
25	598.10	798.23	2440.00**	RECORD HILL
26	596.53	799.26	2440.00**	OLD TURK MT.

** THIS RECEPTOR IS HIGHER IN ELEVATION THAN THAT OF THE LOWEST STACK TOP.
SPECIAL ALGORITHMS CONCERNING PLUME IMPINGEMENT AND REFLECTION MAY INFLENCE CONCENTRATIONS MODELED AT THIS RECEPTOR.

Table 9.7.3 RTDM MODEL OUTPUT EXAMPLE (cont.)

TERRAIN INFORMATION:

TABLE OF DISTANCES (KM) FROM THE SOURCE TO ELEVATION CONTOURS AS A FUNCTION OF WIND DIRECTION

ELEVATION IN USER UNITS:

WIND DIR.	1100.	1200.	1300.	1400.	1500.	1600.	1700.	1800.	1900.	2000.	2100.	2200.	2300.	2400.	2500.	2600.	2700.	2800.	2900.	3000.
10	4.46	4.78	5.01	7.00	7.38															
20	1.50	3.35	3.45	3.75	3.85	3.95	4.05	4.20	4.60	4.70	4.80									
30	1.40	1.50	1.65	3.00	3.10	3.16	3.24	3.31	3.50											
40	1.28	1.40	1.46	1.53	1.61	1.74	1.88	1.98	2.72											
50	1.15	1.30	1.39	1.49	1.60	1.69	1.75	1.82	1.94	2.06	2.13	2.22	2.34							
60	1.18	1.29	1.40	1.48	1.58	1.69	1.80	1.94	2.10	2.24	2.58									
70	1.25	1.47	1.60	1.72	1.87	2.03	2.20	2.32	2.47											
80	1.41	1.58	1.70	1.87	2.00	2.12	2.24	2.38	2.44	2.49	2.59									
90	1.64	1.75	1.88	1.99	2.09	2.20	2.39	2.59	2.76	2.94	3.08									
100	1.99	2.09	2.18	2.30	2.52	2.59	2.66	2.71	2.81	2.95	3.09	3.18	3.29							
110	2.02	2.28	2.40	2.52	2.63	2.72	3.00	3.19	3.55											
120	2.21	2.41	2.52	2.63	5.75	5.90	6.01	6.18	6.30	6.50	6.73	6.85	7.07							
130	2.75	5.47	5.62	5.92	6.01	6.70	6.90	7.37	7.48	7.79										
140	1.22	1.29	6.70	6.80	6.90	7.00														
150	1.11	1.19	1.24	1.29	1.32															
160	1.08	1.15	1.21	1.28	1.38	1.42	5.13	5.32	5.51											
170	1.01	1.12	1.23	1.34	1.48	1.53	4.98													
180	.81	1.04	1.18	1.38	1.51	1.66	1.82	2.10	2.23	2.31	4.79	4.92	5.05							
190	.79	.90	1.07	1.23	1.37	1.50	1.71	1.81	1.91	2.01										
200	.68	.82	1.00	1.16	1.30	1.50	1.68	1.95	2.52											
210	.71	.83	1.03	1.20	1.43	1.58	1.81	2.15	2.30	2.52	2.62	2.73								
220	.82	.99	1.25	1.32	1.49	1.70	2.04	2.22	2.50	2.86	5.58	5.75	6.05	6.11	6.16	6.19	6.21	6.23	6.27	6.29
230	1.05	1.21	1.48	1.61	2.02	2.17	2.28	2.42	2.54	2.67	2.84	3.01	3.17	3.21	3.28	3.32	7.42	7.49		
240	1.05	1.20	1.41	1.61	1.78	1.90	2.04	2.16	2.38	2.52	2.68	2.80	2.91	3.14	3.31	3.39	3.45			
250	1.00	1.23	1.31	1.40	1.56	1.70	1.86	1.97	2.08	2.17	2.30	2.45	2.57	2.80						
260	1.00	1.11	1.27	1.36	1.49	1.60	1.78	2.09	2.27	2.45	2.56	2.63	2.73	2.84						
270	1.03	1.16	1.28	1.38	1.48	1.53	1.66	1.73	1.88	2.09	2.26	2.49	2.61							
280	1.09	1.22	1.34	1.43	1.54	1.63	1.71	1.76	1.82	1.89	1.97	2.10	3.50	3.58	3.70					
290	1.16	1.28	1.43	1.57	1.67	1.76	1.83	1.98	2.13	3.26	3.34	3.50	3.65	3.79	3.90	4.05				
300	1.28	1.41	1.60	1.74	1.89	2.10	2.90	3.01	3.16	3.24	3.33	3.96	4.03	4.17						
310	1.46	1.60	1.75	1.90	2.90	3.04	3.42	3.59	3.75	3.90	3.98	4.08	4.20	8.25	8.35					
320	1.65	1.85	2.00	3.12	3.36	3.49	4.05	4.20	4.42	8.55	8.65									
330	2.18	2.97	4.42	4.61	4.78															
340	6.23	6.42	6.58																	
350	4.69	4.90																		
360	4.31	6.80																		

Table 9.7.3 RTDM MODEL OUTPUT EXAMPLE (cont.)

MAP OF USER-SPECIFIED TERRAIN: LETTERS (SOME OVERWRITTEN) DENOTE ELEVATIONS (SEE TABLE); "+" = SOURCE; "*" = A RECEPTOR POINT
DISTANCES FROM SOURCE (0,0): XMIN = -6122.80 M, XMAX = 6396.47 M, YMIN = -7267.88 M, YMAX = 5362.31 M

CONTOUR CODES

A	1100.00
B	1200.00
C	1300.00
D	1400.00
E	1500.00
F	1600.00
G	1700.00
H	1800.00
I	1900.00
J	2000.00
K	2100.00
L	2200.00
M	2300.00
N	2400.00
O	2500.00
P	2600.00
Q	2700.00
R	2800.00
S	2900.00
T	3000.00

Table 9.7.3 RTDM MODEL OUTPUT EXAMPLE (cont.)

THE CODE FOR MISSING DATA IS PRESENTED AS FOLLOWS:
A "1" IS INCLUDED IF WIND DIRECTION IS MISSING,
A "2" IS INCLUDED IF WIND SPEED IS MISSING,
A "3" IS INCLUDED IF MIXING HEIGHT IS MISSING,
A "4" IS INCLUDED IF STABILITY CLASS IS MISSING,
A "5" IS INCLUDED IF AMBIENT TEMPERATURE IS MISSING.
IF THERE IS MISSING DATA FOR ANY OF THESE PARAMETERS, THE PREVIOUS GOOD VALUE IS USED.
IF THERE IS MISSING DATA FOR OPTIONAL PARAMETERS, THE DEFAULT VALUE (OBTAINED FROM THE STABILITY CLASS) IS USED.

CASE-HOUR # 1 YEAR, DAY, HOUR: 76 365 24

WIND DIRECTION	WIND SPEED #1 (M/SEC)	MIXING HEIGHT (M)	STABILITY CLASS	AIR TEMP (K)	TURB. INTENSITY (Y)	TURB. INTENSITY (Z)	VPTG, PLUME (DEG K/M)	VPTG, HCRIT (DEG K/M)	DELTA THETA (DEG/M)	WSPD PROFILE EXPONENT	WIND SPEED #2 (M/SEC)
220.	1.00	3000.	1	293.15	.2200*	.2000*	.0000	.0000	.1000	.0900	2.00*

* FLAGGED VALUES REPRESENT OPTIONAL METEOROLOGICAL INPUT NOT USED IN THIS RUN

STACK # 1: EMISSIONS = 1000.00 G/SEC, EXIT VELOCITY = 20.00 M/SEC, STACK GAS TEMP = 370.00 DEG K, HCRIT = .00 M
UTOP = 1.25 M/SEC, FLUX = 254.59 M**4/S**3, FINAL RISE = 858.18 M, DISTANCE TO FINAL RISE = 1091.15 M, PEN. FRAC. = .00

REC #	X (KM)	Y (KM)	HT ABOVE STACK BASE (M)	PLUME HT BEFORE TERRAIN (M)	PLUME HT CORRECTED BY TERRAIN (M)	SIGMA-Y AMBIENT (M)	SIGMA-Y BUOY (M)	SIGMA-Y SHEAR (M)	SIGMA-Y TOTAL (M)	SIGMA-Z AMBIENT (M)	SIGMA-Z BUOY (M)	SIGMA-Z TOTAL (M)	HORIZ. DIST. FACTOR (1/M)	CONVENTIONAL VERTICAL DIST. FACTOR (1/M)	REFLECTION VERTICAL DIST. FACTOR (1/M)	R	CHI (UG/M**3)
1	3.26	-1.39	615.	980.10	672.71	623.6	271.4	831.	1073.9	652.9	271.4	707.1	.00016	.71766E-03	.71766E-03	1.27	93.
2	1.69	-2.17	507.	980.10	726.36	344.1	271.4	431.	614.3	338.2	271.4	433.6	.00000	.45242E-03	.92337E-03	1.00	0.
4	.82	-.00	102.	833.17	782.12	174.1	224.9	174.	333.3	164.7	224.9	278.7	.00120	.55872E-04	.14312E-02	1.00	53.
5	.99	-.00	133.	928.15	861.85	208.5	255.0	238.	406.1	198.7	255.0	323.2	.00098	.70589E-04	.12342E-02	1.00	55.
6	1.25	.00	163.	980.10	898.57	259.2	271.4	318.	492.0	249.9	271.4	368.9	.00081	.11139E-03	.10813E-02	1.00	72.
7	1.32	-.00	194.	980.10	883.33	273.0	271.4	336.	511.0	264.0	271.4	378.6	.00078	.13861E-03	.10537E-02	1.00	86.
8	1.49	-.00	224.	980.10	868.09	305.9	271.4	379.	557.8	298.1	271.4	403.1	.00072	.19476E-03	.98967E-03	1.00	111.
9	1.70	.00	255.	980.10	852.85	345.1	271.4	432.	615.9	339.3	271.4	434.5	.00065	.26748E-03	.91862E-03	1.00	138.
10	2.04	.00	285.	980.10	837.61	408.5	271.4	519.	713.8	407.4	271.4	489.5	.00056	.37706E-03	.81729E-03	1.00	168.
11	2.22	-.00	315.	980.10	822.37	442.1	271.4	566.	767.4	444.3	271.4	520.6	.00052	.44016E-03	.77150E-03	1.01	183.
12	2.51	.00	346.	980.10	807.13	492.9	271.4	638.	850.6	501.1	271.4	569.9	.00047	.51356E-03	.71269E-03	1.02	192.
13	2.86	-.00	376.	980.10	791.89	554.9	271.4	728.	954.9	572.1	271.4	633.2	.00042	.57645E-03	.66065E-03	1.05	192.
14	5.58	-.01	407.	980.10	776.65	983.3	271.4	1420.	1748.6	1115.7	271.4	1148.3	.00023	[illegible]	.55289E-03	1.59	101.
15	5.75	-.01	437.	980.10	761.41	1007.8	271.4	1464.	1797.6	1149.8	271.4	1181.4	.00022	.54890E-03	.54887E-03	1.63	97.
16	6.05	-.00	468.	980.10	746.17	1050.2	271.4	1540.	1883.3	1209.4	271.4	1239.5	.00021	.53740E-03	.53740E-03	1.67	91.
17	6.11	-.00	498.	980.10	730.93	1059.2	271.4	1556.	1901.6	1222.2	271.4	1252.0	.00021	.53788E-03	.53784E-03	1.69	90.
18	6.16	.00	529.	980.10	715.69	1066.2	271.4	1569.	1915.9	1232.2	271.4	1261.8	.00021	.53891E-03	.52714E-03	1.67	88.
19	6.19	-.00	559.	980.10	700.45	1070.2	271.4	1576.	1924.0	1237.9	271.4	1267.3	.00021	.54100E-03	.52485E-03	1.67	87.
20	6.21	.00	590.	980.10	685.21	1073.2	271.4	1581.	1930.2	1242.2	271.4	1271.5	.00021	.54333E-03	.52310E-03	1.67	86.
21	6.23	.00	620.	980.10	669.97	1075.2	271.4	1585.	1934.2	1245.0	271.4	1274.3	.00021	.54600E-03	.52197E-03	1.67	86.
22	6.27	-.00	651.	980.10	654.73	1081.1	271.4	1596.	1946.3	1253.5	271.4	1282.5	.00020	.54688E-03	.51860E-03	1.67	85.
23	6.29	.00	681.	980.10	639.49	1084.1	271.4	1601.	1952.5	1257.8	271.4	1286.8	.00020	.54886E-03	.51689E-03	1.67	84.

WARNING: HOURLY SEQUENCE OF INPUT DATA HAS BEEN INTERRUPTED AT THE FOLLOWING YEAR/DAY/HOUR: 76 366 4

Table 9.7.3 RTDM MODEL OUTPUT EXAMPLE (cont.)

CASE-HOUR # 2 YEAR, DAY, HOUR: 76 366 4

WIND DIRECTION	WIND SPEED #1 (M/SEC)	MIXING HEIGHT (M)	STABILITY CLASS	AIR TEMP (K)	TURB. INTENSITY (Y)	TURB. INTENSITY (Z)	VPTG, PLUME (DEG K/M)	VPTG, HCRIT (DEG K/M)	DELTA THETA (DEG/M)	WSPD PROFILE EXPONENT	WIND SPEED #2 (M/SEC)
220.	3.00	1000.	1	293.15	.2200*	.2000*	.0000	.0000	.1000	-.0900	6.00*

* FLAGGED VALUES REPRESENT OPTIONAL METEOROLOGICAL INPUT NOT USED IN THIS RUN

STACK # 1: EMISSIONS = 1000.00 G/SEC, EXIT VELOCITY = 20.00 M/SEC, STACK GAS TEMP = 370.00 DEG K, HCRIT = .00 M
UTOP = 2.44 M/SEC, FLUX = 254.59 M**4/S**3, FINAL RISE = 440.76 M, DISTANCE TO FINAL RISE = 1091.15 M, PEN. FRAC. = .00

REC #	X (KM)	Y (KM)	HT ABOVE STACK BASE (M)	PLUME HT BEFORE TERRAIN (M)	PLUME HT CORRECTED BY TERRAIN (M)	SIGMA-Y AMBIENT (M)	SIGMA-Y BUOY (M)	SIGMA-Y SHEAR (M)	SIGMA-Y TOTAL (M)	SIGMA-Z AMBIENT (M)	SIGMA-Z BUOY (M)	SIGMA-Z TOTAL (M)	HORIZ. DIST. FACTOR (1/M)	CONVENTIONAL VERTICAL DIST. FACTOR (1/M)	REFLECTION VERTICAL DIST. FACTOR (1/M)	R	CHI (UG/M**3)
1	3.26	-1.39	615.	562.68	281.34	623.6	139.4	427.	768.4	652.9	139.4	667.6	.00010	.14524E-02	.71019E-03	1.19	30.
4	.82	-.00	102.	487.22	436.17	174.1	115.5	89.	227.2	164.7	115.5	201.1	.00176	.37787E-03	.19834E-02	1.00	272.
5	.99	-.00	133.	536.00	469.71	208.5	130.9	122.	274.8	198.7	130.9	238.0	.00145	.47806E-03	.16781E-02	1.00	285.
6	1.25	.00	163.	562.68	481.15	259.2	139.4	163.	336.6	249.9	139.4	286.2	.00119	.67834E-03	.14205E-02	1.02	330.
7	1.32	-.00	194.	562.68	465.91	273.0	139.4	173.	351.7	264.0	139.4	298.5	.00113	.79094E-03	.13812E-02	1.03	368.
8	1.49	-.00	224.	562.68	450.67	305.9	139.4	195.	388.5	298.1	139.4	329.1	.00103	.94991E-03	.12936E-02	1.07	400.
9	1.70	.00	255.	562.68	435.43	345.1	139.4	222.	433.3	339.3	139.4	366.8	.00092	.10789E-02	.12613E-02	1.16	407.
10	2.04	.00	285.	562.68	420.19	408.5	139.4	266.	507.2	407.4	139.4	430.6	.00079	.11712E-02	.12202E-02	1.32	378.
11	2.22	-.00	315.	562.68	404.95	442.1	139.4	290.	547.0	444.3	139.4	465.6	.00073	.12132E-02	.11284E-02	1.32	337.
12	2.51	.00	346.	562.68	389.71	492.9	139.4	328.	608.1	501.1	139.4	520.2	.00066	.12392E-02	.10101E-02	1.32	272.
13	2.86	-.00	376.	562.68	374.47	554.9	139.4	374.	683.5	572.1	139.4	588.8	.00058	.12541E-02	.89237E-03	1.32	214.
14	5.58	-.01	407.	562.68	359.23	983.3	139.4	729.	1232.2	1115.7	139.4	1124.4	.00032	.12554E-02	.46731E-03	1.32	62.
15	5.75	-.01	437.	562.68	343.99	1007.8	139.4	752.	1265.0	1149.8	139.4	1158.2	.00032	.12799E-02	.45367E-03	1.32	59.
16	6.05	-.00	468.	562.68	328.75	1050.2	139.4	791.	1322.0	1209.4	139.4	1217.5	.00030	.13054E-02	.43159E-03	1.32	53.
17	6.11	-.00	498.	562.68	313.51	1059.2	139.4	799.	1334.1	1222.2	139.4	1230.2	.00030	.13319E-02	.42713E-03	1.32	52.
18	6.16	.00	529.	562.68	298.27	1066.2	139.4	806.	1343.6	1232.2	139.4	1240.1	.00030	.13595E-02	.42371E-03	1.32	52.
19	6.19	-.00	559.	562.68	283.03	1070.2	139.4	809.	1348.9	1237.9	139.4	1245.7	.00030	.13882E-02	.36039E-03	1.13	44.
20	6.21	.00	590.	562.68	281.34	1073.2	139.4	812.	1353.0	1242.2	139.4	1250.0	.00029	.14182E-02	.36904E-03	1.16	45.
21	6.23	.00	620.	562.68	281.34	1075.2	139.4	814.	1355.7	1245.0	139.4	1252.8	.00029	.14496E-02	.38177E-03	1.20	46.
22	6.27	-.00	651.	562.68	281.34	1081.1	139.4	819.	1363.7	1253.5	139.4	1261.2	.00029	.14823E-02	.39905E-03	1.26	48.
23	6.29	.00	681.	562.68	281.34	1084.1	139.4	822.	1367.8	1257.8	139.4	1265.5	.00029	.15166E-02	.41986E-03	1.33	50.

WARNING: HOURLY SEQUENCE OF INPUT DATA HAS BEEN INTERRUPTED AT THE FOLLOWING YEAR/DAY/HOUR: 76 366 9

Table 9.7.4 POSTRTDM POSTPROCESSOR INPUT EXAMPLE

```
TOPVAL
              3    1    5
                  26  1000000.
99999
CUMFREQ
                                                     1000000.        1    6   26
               100.      200.      500.      1000.     2000.     3000.
99999
PEAK
              3 1300.
                             TRUE        26
99999
ENDJOB
```

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE

```
POSTRTDM (DATED 87308)
A POSTPROCESSOR FOR RTDM IN
SECTION 5.  ADDED MODELS
IN UNAMAP (VERSION 6) JAN. 88.
SOURCE: FILE 69 ON UNAMAP MAGNETIC TAPE FROM NTIS.


POST-PROCESSING ANALYSIS PROGRAM     VERSION 2.30     LEVEL 851125                    PAGE   1


TOPVAL


        LP   NH   NM    DAYSIN    HOURIN

         3    1    5        0.        0.


             NR   RFACT

             26  1000000.
```

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

TOP 5 CONCENTRATIONS OF 3-HOUR AVERAGES FOR 12. HOURS

RECEPTOR	TOP 1	TOP 2	TOP 3	TOP 4	TOP 5
1	50.3199	21.6488	7.5388	4.0718	.0000
DAY/HOUR	1 3	1 6	1 12	1 9	0 0
2	.1518	.0000	.0000	.0000	.0000
DAY/HOUR	1 3	0 0	0 0	0 0	0 0
3	.0000	.0000	.0000	.0000	.0000
DAY/HOUR	0 0	0 0	0 0	0 0	0 0
4	136.1602	83.8222	35.7886	35.5832	.0000
DAY/HOUR	1 3	1 6	1 12	1 9	0 0
5	269.7670	245.5854	149.0267	126.6390	.0000
DAY/HOUR	1 12	1 9	1 3	1 6	0 0
6	1262.1850	920.3137	203.1549	187.3455	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
7	3819.6690	2044.5440	272.2936	219.7414	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
8	3899.6630	1883.4580	359.3203	260.5280	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
9	3571.9360	1657.4470	431.1164	292.3247	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
10	3074.4730	1380.3760	465.0374	306.3411	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
11	1835.6550	1269.5880	455.6443	303.7567	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
12	983.9475	717.1691	402.2765	283.5098	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
13	534.7793	452.8684	346.2037	246.5173	.0000
DAY/HOUR	1 12	1 9	1 6	1 3	0 0
14	252.3061	203.3567	195.1618	102.6588	.0000
DAY/HOUR	1 9	1 12	1 6	1 3	0 0
15	210.7244	180.0652	165.4920	98.4839	.0000
DAY/HOUR	1 9	1 6	1 12	1 3	0 0
16	185.5454	160.9032	147.4989	91.1543	.0000
DAY/HOUR	1 9	1 6	1 12	1 3	0 0

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

TOP 5 CONCENTRATIONS OF 3-HOUR AVERAGES FOR 12. HOURS

RECEPTOR	TOP 1	TOP 2	TOP 3	TOP 4	TOP 5
17	175.6689	142.9538	142.1053	90.1048	.0000
DAY/HOUR	1 9	1 6	1 12	1 3	0 0
18	162.0885	160.4148	112.1217	88.1402	.0000
DAY/HOUR	1 9	1 6	1 12	1 3	0 0
19	172.4079	141.5300	85.5361	72.4913	.0000
DAY/HOUR	1 9	1 6	1 3	1 12	0 0
20	159.9875	158.0479	85.3923	43.2357	.0000
DAY/HOUR	1 6	1 9	1 3	1 12	0 0
21	169.5783	121.0289	85.5868	23.7747	.0000
DAY/HOUR	1 9	1 6	1 3	1 12	0 0
22	172.5279	148.2005	85.3343	12.0264	.0000
DAY/HOUR	1 9	1 6	1 3	1 12	0 0
23	163.9015	154.1527	85.6824	5.6163	.0000
DAY/HOUR	1 6	1 9	1 3	1 12	0 0
24	.0000	.0000	.0000	.0000	.0000
DAY/HOUR	0 0	0 0	0 0	0 0	0 0
25	.0000	.0000	.0000	.0000	.0000
DAY/HOUR	0 0	0 0	0 0	0 0	0 0
26	.0000	.0000	.0000	.0000	.0000
DAY/HOUR	0 0	0 0	0 0	0 0	0 0

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

POST-PROCESSING ANALYSIS PROGRAM VERSION 2.30 LEVEL 851125 PAGE 4

TOP 25 HIGHEST AND HIGHEST, SECOND-HIGHEST CONCENTRATIONS

	HIGHEST		HIGHEST, SECOND-HIGHEST	
RANK	RECEPTOR	CONCENTRATION	RECEPTOR	CONCENTRATION
1	8	3899.663	7	2044.544
2	7	3819.669	8	1883.458
3	9	3571.936	9	1657.447
4	10	3074.473	10	1380.376
5	11	1835.655	11	1269.588
6	6	1262.185	6	920.314
7	12	983.948	12	717.169
8	13	534.779	13	452.868
9	5	269.767	5	245.585
10	14	252.306	14	203.357
11	15	210.724	15	180.065
12	16	185.545	16	160.903
13	17	175.669	18	160.415
14	22	172.528	20	158.048
15	19	172.408	23	154.153
16	21	169.578	22	148.201
17	23	163.902	17	142.954
18	18	162.089	19	141.530
19	20	159.988	21	121.029
20	4	136.160	4	83.822
21	1	50.320	1	21.649
22	2	.152	22	.000
23	23	.000	23	.000
24	24	.000	24	.000
25	25	.000	25	.000

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CUMFREQ

HOURIN	DAYSIN	RFACT	NHR	NLEV	NR
0.	0.	1000000.	1	6	26

CUMULATIVE LEVELS:

100.0 200.0 500.0 1000.0 2000.0 3000.0

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

POST-PROCESSING ANALYSIS PROGRAM VERSION 2.30 LEVEL 851125 PAGE 6

CUMULATIVE FREQUENCIES OF 1-HOUR AVERAGES FOR 12. OBSERVATIONS

RECEPTOR	LEVEL 100.0	LEVEL 200.0	LEVEL 500.0	LEVEL 1000.0	LEVEL 2000.0
1	1.0000	.0000	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	1.0000	1.0000	1.0000
2	1.0000	.0000	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	.0000	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	1.0000	1.0000	1.0000
4	.8333	.0833	.0833	.0000	.0000
CUM FREQ	.8333	.9167	1.0000	1.0000	1.0000
5	.5000	.2500	.0833	.1667	.0000
CUM FREQ	.5000	.7500	.8333	1.0000	1.0000
6	.2500	.2500	.3333	.0000	.0000
CUM FREQ	.2500	.5000	.8333	.8333	.8333
7	.2500	.0000	.5000	.0000	.0833
CUM FREQ	.2500	.2500	.7500	.7500	.8333
8	.1667	.0833	.2500	.2500	.0833
CUM FREQ	.1667	.2500	.5000	.7500	.8333
9	.0833	.1667	.2500	.1667	.1667
CUM FREQ	.0833	.2500	.5000	.6667	.8333
10	.0000	.2500	.2500	.1667	.1667
CUM FREQ	.0000	.2500	.5000	.6667	.8333
11	.0000	.0833	.4167	.1667	.1667
CUM FREQ	.0000	.0833	.5000	.6667	.8333
12	.0000	.0833	.4167	.2500	.2500
CUM FREQ	.0000	.0833	.5000	.7500	1.0000
13	.0000	.1667	.6667	.1667	.0000
CUM FREQ	.0000	.1667	.8333	1.0000	1.0000
14	.2500	.3333	.4167	.0000	.0000
CUM FREQ	.2500	.5833	1.0000	1.0000	1.0000
15	.5000	.1667	.3333	.0000	.0000
CUM FREQ	.5000	.6667	1.0000	1.0000	1.0000
16	.5000	.1667	.3333	.0000	.0000
CUM FREQ	.5000	.6667	1.0000	1.0000	1.0000

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

CUMULATIVE FREQUENCIES OF 1-HOUR AVERAGES FOR 12. OBSERVATIONS

RECEPTOR	LEVEL 3000.0	LEVEL **********	AVG:# OBS= 12.0
1	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	20.8948
2	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	.0380
3	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	.0000
4	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	72.8385
5	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	197.7546
6	.0833	.0833	.0000
CUM FREQ	.9167	1.0000	643.2498
7	.0000	.1667	.0000
CUM FREQ	.8333	1.0000	1589.0620
8	.0000	.1667	.0000
CUM FREQ	.8333	1.0000	1600.7420
9	.0000	.1667	.0000
CUM FREQ	.8333	1.0000	1488.2060
10	.0000	.1667	.0000
CUM FREQ	.8333	1.0000	1306.5570
11	.0833	.0833	.0000
CUM FREQ	.9167	1.0000	966.1608
12	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	596.7258
13	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	395.0922
14	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	188.3708
15	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	163.6914
16	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	146.2755

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

CUMULATIVE FREQUENCIES OF 1-HOUR AVERAGES FOR 12. OBSERVATIONS

RECEPTOR	LEVEL 100.0	LEVEL 200.0	LEVEL 500.0	LEVEL 1000.0	LEVEL 2000.0
17	.5000	.1667	.3333	.0000	.0000
CUM FREQ	.5000	.6667	1.0000	1.0000	1.0000
18	.5000	.1667	.3333	.0000	.0000
CUM FREQ	.5000	.6667	1.0000	1.0000	1.0000
19	.5000	.2500	.2500	.0000	.0000
CUM FREQ	.5000	.7500	1.0000	1.0000	1.0000
20	.5000	.2500	.2500	.0000	.0000
CUM FREQ	.5000	.7500	1.0000	1.0000	1.0000
21	.5833	.2500	.1667	.0000	.0000
CUM FREQ	.5833	.8333	1.0000	1.0000	1.0000
22	.5833	.1667	.2500	.0000	.0000
CUM FREQ	.5833	.7500	1.0000	1.0000	1.0000
23	.5833	.1667	.2500	.0000	.0000
CUM FREQ	.5833	.7500	1.0000	1.0000	1.0000
24	1.0000	.0000	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	.0000	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	1.0000	1.0000	1.0000
26	1.0000	.0000	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	1.0000	1.0000	1.0000

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

POST-PROCESSING ANALYSIS PROGRAM   VERSION 2.30   LEVEL 851125   PAGE 9

CUMULATIVE FREQUENCIES OF 1-HOUR AVERAGES FOR 12. OBSERVATIONS

RECEPTOR	LEVEL 3000.0	LEVEL **********	AVG:# OBS= 12.0
17	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	137.7082
18	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	130.6913
19	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	117.9913
20	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	111.6659
21	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	99.9922
22	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	104.5223
23	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	102.3382
24	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	.0000
25	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	.0000
26	.0000	.0000	.0000
CUM FREQ	1.0000	1.0000	.0000

POST-PROCESSING ANALYSIS PROGRAM   VERSION 2.30   LEVEL 851125   PAGE 10

PEAK

NHR	THR	HOURIN	DAYSIN	NH
3	1300.	0.	0.	1

RFACT	UNITS	LPRINT	NR	SCALE
1000000.		T	26	1.

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

```
   POST-PROCESSING ANALYSIS PROGRAM     VERSION 2.30      LEVEL 851125                    PAGE  11
 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR  9  AT RECEPTOR   7
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1        36.6819           1000  220    4    3
    2       315.7731            450  220    4   15
    3      5781.1780           9999  220    5    2
MEAN       2044.5440

 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR  9  AT RECEPTOR   8
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1        62.0010           1000  220    4    3
    2       583.2977            450  220    4   15
    3      5005.0750           9999  220    5    2
MEAN       1883.4580

 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR  9  AT RECEPTOR   9
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1        98.6674           1000  220    4    3
    2       597.5693            450  220    4   15
    3      4276.1050           9999  220    5    2
MEAN       1657.4470

 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR  9  AT RECEPTOR  10
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1       147.6516           1000  220    4    3
    2       596.3587            450  220    4   15
    3      3397.1180           9999  220    5    2
MEAN       1380.3760

 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR 12  AT RECEPTOR   7
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1       418.7848           9999  220    5    4
    2      1036.0460           9999  220    6    3
    3     10004.1800           9999  220    6    4
MEAN       3819.6690

 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR 12  AT RECEPTOR   8
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1       765.3048           9999  220    5    4
    2      1899.2800           9999  220    6    3
    3      9034.4030           9999  220    6    4
MEAN       3899.6630

 1300.0000 UG/M**3  EXCEEDED AT DAY    1 HOUR 12  AT RECEPTOR   9
**** CONCENTRATIONS (UG/M**3 )         WEATHER
RECORD        TOTAL             MIX  DIR  STAB SPD
    1      1205.0840           9999  220    5    4
    2      1659.8770           9999  220    6    3
    3      7850.8470           9999  220    6    4
MEAN       3571.9360
```

Table 9.7.5 POSTRTDM POSTPROCESSOR OUTPUT EXAMPLE (cont.)

```
     POST-PROCESSING ANALYSIS PROGRAM      VERSION 2.30      LEVEL 851125                    PAGE  12

  1300.0000 UG/M**3  EXCEEDED AT DAY     1 HOUR 12  AT RECEPTOR  10
 **** CONCENTRATIONS (UG/M**3 )          WEATHER
 RECORD         TOTAL               MIX  DIR  STAB SPD
     1       1448.6440             9999  220    5    4
     2       1367.1700             9999  220    6    3
     3       6407.6040             9999  220    6    4
 MEAN        3074.4730

  1300.0000 UG/M**3  EXCEEDED AT DAY     1 HOUR 12  AT RECEPTOR  11
 **** CONCENTRATIONS (UG/M**3 )          WEATHER
 RECORD         TOTAL               MIX  DIR  STAB SPD
     1       1319.3230             9999  220    5    4
     2       1246.4150             9999  220    6    3
     3       2941.2260             9999  220    6    4
 MEAN        1835.6550

     POST-PROCESSING ANALYSIS PROGRAM      VERSION 2.30      LEVEL 851125                    PAGE  13

 TOTAL MAXIMUM CONCENTRATIONS (UG/M**3 ) FOR     4 ( 3-HOUR) AVERAGING PERIOD(S)

  RECEP +    1    +    2    +    3    +    4    +    5    +    6    +    7    +    8    +
 -------+---------+---------+---------+---------+---------+---------+---------+---------+
   CONC ]  50.320]     .152]     .000] 136.160] 269.767]1262.185]3819.669]3899.663]
 DAY/HR ]   1   3]   1   3]   0   0]   1   3]   1  12]   1  12]   1  12]   1  12]

  RECEP +    9    +   10    +   11    +   12    +   13    +   14    +   15    +   16    +
 -------+---------+---------+---------+---------+---------+---------+---------+---------+
   CONC ]3571.936]3074.473]1835.655] 983.948] 534.779] 252.306] 210.724] 185.545]
 DAY/HR ]   1  12]   1  12]   1  12]   1  12]   1  12]   1   9]   1   9]   1   9]

  RECEP +   17    +   18    +   19    +   20    +   21    +   22    +   23    +   24    +
 -------+---------+---------+---------+---------+---------+---------+---------+---------+
   CONC ] 175.669] 162.089] 172.408] 159.988] 169.578] 172.528] 163.902]     .000]
 DAY/HR ]   1   9]   1   9]   1   9]   1   6]   1   9]   1   9]   1   6]   0   0]

  RECEP +   25    +   26    +
 -------+---------+---------+
   CONC ]     .000]     .000]
 DAY/HR ]   0   0]   0   0]

     POST-PROCESSING ANALYSIS PROGRAM      VERSION 2.30      LEVEL 851125                    PAGE  14

     NUMBER OF  3-HOUR AVERAGES ABOVE  1300.0000 UG/M**3  FOR    12 HOURS

 RECEPTORS:
 -------+---------+---------+---------+---------+---------+---------+---------+---------+
   1-  8]     0  ]     0  ]     0  ]     0  ]     0  ]     0  ]     2  ]     2  ]
 -------]---------]---------]---------]---------]---------]---------]---------]---------]
   9- 16]     2  ]     2  ]     1  ]     0  ]     0  ]     0  ]     0  ]     0  ]
 -------]---------]---------]---------]---------]---------]---------]---------]---------]
  17- 24]     0  ]     0  ]     0  ]     0  ]     0  ]     0  ]     0  ]     0  ]
 -------]---------]---------]---------]---------]---------]---------]---------]---------]
  25- 26]     0  ]     0  ]
 -------]---------]---------]
```

Toxic ≠ Hazardous — critical release
continuous basis of release

TSCST2

- Instantaneous or nonsteady state or puff state.
- Instantaneous release.
- accidental release

"EPA guidance for Refined analysis of Toxic Gas Release"
(4/91)

Lesson 10

Toxic Gas Models

(1) Refined models for Toxic Analyses — 1991
(SCRAMBLE) by Guinnup

(1) screening analysis — TSCREEN (SCRAMBLE)
physical property
inlet condition

- continuous ~~non~~-dense gas — SCREEN model.
- Instantaneous release of non-dense gas — PUFF model
- continuous release of dense gas — RVD model
- Instantaneous release of dense gas — PUNT!! no model.

Tiist TSCREAN

↓

Refined model – SLAB

DEGADIS

HEGadas

AFTOX.

"Work book for Toxic Screening release" — SCRAM

10.1 Introduction

I. Fundamentals of Puff-type Models

A. Introduction

B. Coordinate System

C. Dispersion Equations

$$CHI = \frac{Q}{(2\ pi)^{2/3}\ sig_x\ sig_y\ sig_z}\ EXP\left[\frac{-1}{2}\left(\frac{x - u(t-t_0)}{sig_x}\right)^{1/2}\right]$$

where:

Q = Total mass emitted at time t_0
U = Wind speed
x = Downwind location of receptor.
t = Current time
t_0 = Time of release

II. Differences between steady-state and puff type models

A. Moving frame of reference

B. Dispersion Coefficients

C. Averaging Periods

III. Summary

IV. Questions

10.2 SARA Screening

I. Determination of Emission Rates

A. Introduction

B. Estimation of Airborne Quantity Released for Liquids (*Technical Guidance for Hazards Analysis,* Appendix G)

C. AP-42

II. SARA Title III Requirements

A. Introduction

B. Estimation of Airborne Quantity Released (QR) (*Technical Guidance for Hazards Analysis,* p. 3-1 through 3-18)

1. Gases

2. Liquids

3. Solids

C. Levels of Concern (LOC) (*Technical Guidance for Hazards Analysis,* p. 3-1 through 3-18)

D. Vulnerable Zone (*Technical Guidance for Hazards Analysis,* p. 3-1 through 3-18)

III. Summary

IV. Questions

10.3 INPUFF & SPILLS

I. INPUFF2.2 Model

A. Introduction

B. Input Data -- Table 10.3.1

C. Model Output -- Table 10.3.2

II. Shell SPILLS Model

A. Introduction

B. Input Data and Model Output -- Table 10.3.3

III. Summary

IV. Questions

Table 10.3.1 INPUFF INPUT (EXAMPLE 1 FROM USER'S GUIDE)

```
   EXAMPLE 1     MOVING SOURCE
6,F,F,1,1000.,T,F
0.,0.,25.,15.
2,1200,1,8
1.54,1.19,0.
1.65,1.35,0.
2.,1.5,0.
2.35,1.35,0.
1.08,1.38,0.
1.3,1.7,0.
2.,2.,0.
2.7,1.7,0.
T,F,F,F,T
-1,60,0,.75,10.
180. 3.5 3000. 3 .074 .105 290. .5
170. 4.0 3000. 4 .047 .067 288. .5
0.,.2,2,1200,0.,0.
600.,30.,390.,2.,15.,0.,1.,1.,90.,2.
600.,30.,390.,2.,15.,0.,1.,1.,45.,2
```

Table 10.3.2 INPUFF EXAMPLE 1 OUTPUT FROM USER'S GUIDE

```
                 INPUFF 2.2   MULTIPLE SOURCE INTEGRATED PUFF MODEL (DATED 88027)
                   AN AIR QUALITY DISPERSION MODEL IN
                   SECTION 2. NON-GUIDELINE MODELS,
                   IN UNAMAP (VERSION 6) JUL 86.


     EXAMPLE 1     MOVING SOURCE


   M O D E L   O P T I O N S          A "T" INDICATES THAT
                                 THE OPTION HAS BEEN EXERCISED

   USER SUPPLIED WIND FIELD        F
   UNIT 22 OUTPUT OPTION           F
   PRINT PUFF INFORMATION          T
   INTERMEDIATE CONCENTRATIONS     F

   DISPERSION CALCULATED USING PASQUILL-GIFFORD (DISTANCE DEPENDENT) SIGMA CURVES,
   WITH TRANSITION TO DRAXLER'S LONG RANGE TRANSPORT SIGMA-Y AT SYMAX =    1000.0 METERS.


 1                  B E G I N   A N A L Y S I S   O F   S O U R C E   N U M B E R    1

   S O U R C E   O P T I O N S          A "T" INDICATES THAT
                                   THE OPTION HAS BEEN EXERCISED

   STACK DOWNWASH                  T
   BUOYANCY INDUCED DISPERSION     F
   DEPOSITION AND SETTLING         F
   USER PLUME RISE                 F
   PERFORM PUFF COMBINATIONS       T


   I N P U T   P A R A M E T E R S

   SOURCE UPDATE INTERVAL =   1200 SECONDS.   (-1 INDICATES NO UPDATE)
   START CONCENTRATION CALCULATIONS AT TIME =      0 SECONDS.
   ANEMOMETER HEIGHT =  10.0 METERS.


 1 * * *   I N F O R M A T I O N   F O R   S O U R C E   N U M B E R    1   * * *

  SOURCE   STACK     STACK     STACK GAS  STACK    VOLUME     COORD. AT TIME      0 SECONDS
  STRENGTH HEIGHT    TEMP.     VELOCITY  DIAMETER   FLOW        EAST           NORTH
   (G/SEC)  (M)     (DEG-K)    (M/SEC)     (M)   (M**3/SEC)     (KM)           (KM)

  .600E+03  30.00   390.000    15.000    2.000       .000       .000           .200

  SOURCE    SOURCE      PLUME     INITIAL SIGMAS  DEPOSITION    SETTLING
  SPEED     DIRECTION   HEIGHT       (R)    (Z)    VELOCITY     VELOCITY
  (M/SEC)   (DEG)        (M)            (M)        (CM/SEC)     (CM/SEC)

     2.000     90.0     113.47       1.0    1.0       .00           .00
```

Table 10.3.2 INPUFF EXAMPLE 1 OUTPUT FROM USER'S GUIDE (cont.)

*** METEOROLOGY ***

WIND DIR. (DEG)	WIND SPD. (M/SEC)	MIXING HGT. (M)	PROF.EP (DIMEN)	STABILITY (CLASS)	U PLUME (M/SEC)	TEMP (K)	SIGMA TH. (RAD.)	SIGMA PH. (RAD.)
180.0	3.500	3000.	.100	3	4.462	290.0	.1050	.0740

SIMULATION PERIOD START (SEC)	SIMULATION PERIOD STOP (SEC)	SIMULATION TIME (SEC)	PUFF RELEASE RATE (SEC)	SOURCE RECEPTOR DISTANCE (KM)	PUFF COMB. CRITERION (SIGMAS)
0	1200	1200	20.000	.50	.750

PUFF#	X (M)	Y (M)	Z (M)	TIME (MILLISEC)	TOTAL Q (GRAMS)	SY (M)	SZ (M)	TRAV. D. (KM)	KEYP
1	139.998	5242.374	113.471	69999	72000.00	445.491	269.076	5.042	1
2	359.998	4751.523	113.471	179999	60000.00	406.437	245.068	4.552	1
3	539.998	4349.918	113.471	270000	48000.00	374.129	225.262	4.150	1
4	699.997	3992.936	113.471	350000	48000.00	345.116	207.519	3.793	1
5	859.998	3635.953	113.471	430000	48000.00	315.787	189.628	3.436	1
6	999.999	3323.594	113.471	499999	36000.00	289.869	173.853	3.124	1
7	1100.000	3100.480	113.471	550000	24000.00	271.176	162.500	2.900	1
8	1180.000	2921.989	113.471	590000	24000.00	256.110	153.364	2.722	1
9	1260.000	2743.497	113.471	630000	24000.00	240.938	144.177	2.543	1
10	1340.000	2565.006	113.471	670000	24000.00	225.652	134.935	2.365	1
11	1420.000	2386.515	113.471	710000	24000.00	210.243	125.634	2.187	1
12	1500.000	2208.024	113.471	750000	24000.00	194.702	116.268	2.008	1
13	1580.000	2029.533	113.471	790000	24000.00	179.016	106.830	1.830	1
14	1660.000	1851.042	113.471	830000	24000.00	163.166	97.312	1.651	1
15	1740.000	1672.551	113.471	870000	24000.00	147.145	87.708	1.473	1
16	1800.000	1538.682	113.471	900000	12000.00	135.008	80.444	1.339	1
17	1839.999	1449.437	113.471	920000	12000.00	126.846	75.565	1.249	1
18	1879.999	1360.191	113.471	940000	12000.00	118.625	70.656	1.160	1
19	1919.999	1270.946	113.471	960000	12000.00	110.341	65.716	1.071	1
20	1959.999	1181.700	113.471	980000	12000.00	101.990	60.741	.982	1
21	1999.999	1092.455	113.471	1000000	12000.00	93.565	55.727	.892	1
22	2039.999	1003.209	113.471	1020000	12000.00	85.058	50.671	.803	1
23	2079.999	913.964	113.471	1040000	12000.00	76.461	45.567	.714	1
24	2119.999	824.719	113.471	1060000	12000.00	67.762	40.409	.625	1
25	2159.999	735.473	113.471	1080000	12000.00	58.947	35.189	.535	1
26	2199.999	646.228	113.471	1100000	12000.00	49.995	29.895	.446	1
27	2239.999	556.982	113.471	1120000	12000.00	40.880	24.512	.357	1
28	2279.999	467.737	113.471	1140000	12000.00	31.560	19.014	.268	1
29	2319.999	378.491	113.471	1160000	12000.00	21.965	13.362	.178	1
30	2359.999	289.246	113.471	1180000	12000.00	11.953	7.468	.089	1
31	2399.999	200.000	113.471	1200000	12000.00	1.000	1.000	.000	1

Table 10.3.2 INPUFF EXAMPLE 1 OUTPUT FROM USER'S GUIDE (cont.)

1200 SEC AVG. CONCENTRATION AT RECEPTORS FOR SIMULATION PERIOD 0 TO 1200 SECONDS
DUE TO SOURCE NUMBER 1

RECEPTORS X (KM)	Y (KM)	Z (M)	CONCENTRATION (G/M**3)
1.540	1.190	.000	1.353E-04
1.650	1.350	.000	1.667E-04
2.000	1.500	.000	2.165E-05
2.350	1.350	.000	1.211E-08
1.080	1.380	.000	1.803E-04
1.300	1.700	.000	2.208E-04
2.000	2.000	.000	3.692E-06
2.700	1.700	.000	0.000E+00

*** I N F O R M A T I O N F O R S O U R C E N U M B E R 1 ***

SOURCE STRENGTH (G/SEC)	STACK HEIGHT (M)	STACK TEMP. (DEG-K)	STACK GAS VELOCITY (M/SEC)	STACK DIAMETER (M)	VOLUME FLOW (M**3/SEC)	COORD. AT TIME 1200 SECONDS EAST (KM)	NORTH (KM)
.600E+03	30.00	390.000	15.000	2.000	.000	2.400	.200

SOURCE SPEED (M/SEC)	SOURCE DIRECTION (DEG)	PLUME HEIGHT (M)	INITIAL SIGMAS (R) (M)	(Z)	DEPOSITION VELOCITY (CM/SEC)	SETTLING VELOCITY (CM/SEC)
2.000	45.0	100.17	1.0	1.0	.00	.00

*** M E T E O R O L O G Y ***

WIND DIR. (DEG)	WIND SPD. (M/SEC)	MIXING HGT. (M)	PROF.EP (DIMEN)	STABILITY (CLASS)	U PLUME (M/SEC)	TEMP (K)	SIGMA TH. (RAD.)	SIGMA PH. (RAD.)
170.0	4.000	3000.	.150	4	5.652	288.0	.0670	.0470

SIMULATION PERIOD START (SEC)	STOP (SEC)	SIMULATION TIME (SEC)	PUFF RELEASE RATE (SEC)	SOURCE RECEPTOR DISTANCE (KM)	PUFF COMB. CRITERION (SIGMAS)
1200	2400	1200	12.000	.50	.750

Table 10.3.2 INPUFF EXAMPLE 1 OUTPUT FROM USER'S GUIDE (cont.)

PUFF#	X (M)	Y (M)	Z (M)	TIME (MILLISEC)	TOTAL Q (GRAMS)	SY (M)	SZ (M)	TRAV. D. (KM)	KEYP
1	202.338	9154.611	113.471	690000	96000.00	557.316	249.356	9.058	1
2	502.338	8485.272	113.471	839999	84000.00	508.543	219.018	8.388	1
3	742.338	7949.802	113.471	959999	60000.00	468.597	195.082	7.853	1
4	962.338	7458.951	113.471	1069999	72000.00	430.997	173.770	7.362	1
5	1186.135	6964.585	110.401	1181076	62400.00	392.077	154.160	6.861	1
6	1380.448	6604.855	100.167	1265999	43200.00	365.951	144.004	6.409	1
7	1581.678	6256.130	100.167	1350000	57600.00	341.613	135.143	5.934	1
8	1754.162	5957.222	100.167	1422000	28800.00	320.573	127.450	5.527	1
9	1869.151	5757.950	100.167	1470000	28800.00	306.448	122.268	5.256	1
10	2012.887	5508.860	100.167	1529999	43200.00	288.675	115.725	4.917	1
11	2156.623	5259.770	100.167	1590000	28800.00	270.762	109.103	4.578	1
12	2271.612	5060.499	100.167	1638000	28800.00	256.325	103.745	4.306	1
13	2372.228	4886.135	100.167	1680000	21600.00	243.610	99.008	4.069	1
14	2472.843	4711.772	100.167	1722000	28800.00	230.812	94.224	3.832	1
15	2602.206	4487.591	100.167	1775999	36000.00	214.223	87.994	3.527	1
16	2731.568	4263.410	100.167	1830000	28800.00	197.489	81.677	3.221	1
17	2846.557	4064.138	100.167	1878000	28800.00	182.465	75.973	2.950	1
18	2947.173	3889.775	100.167	1920000	21600.00	169.197	70.907	2.713	1
19	3019.041	3765.230	100.167	1950000	14400.00	159.646	67.241	2.543	1
20	3090.909	3640.685	100.167	1980000	21600.00	150.027	63.534	2.374	1
21	3162.777	3516.140	100.167	2010000	14400.00	140.337	59.781	2.204	1
22	3220.271	3416.504	100.167	2034000	14400.00	132.529	56.743	2.068	1
23	3277.766	3316.868	100.167	2058000	14400.00	124.668	53.670	1.933	1
24	3320.887	3242.141	100.167	2076000	7200.00	118.735	51.342	1.831	1
25	3364.008	3167.414	100.167	2094000	14400.00	112.769	48.991	1.729	1
26	3421.502	3067.778	100.167	2118000	14400.00	104.759	45.819	1.594	1
27	3464.623	2993.051	100.167	2136000	7200.00	98.706	43.410	1.492	1
28	3507.744	2918.324	100.167	2154000	14400.00	92.610	40.971	1.390	1
29	3565.238	2818.688	100.167	2178000	14400.00	84.416	37.672	1.255	1
30	3608.359	2743.960	100.167	2196000	7200.00	78.217	35.161	1.153	1
31	3637.106	2694.143	100.167	2208000	7200.00	74.053	33.464	1.085	1
32	3665.854	2644.324	100.167	2220000	7200.00	69.864	31.749	1.017	1
33	3694.601	2594.506	100.167	2232000	7200.00	65.648	30.015	.949	1
34	3723.348	2544.688	100.167	2244000	7200.00	61.403	28.260	.882	1
35	3752.095	2494.870	100.167	2256000	7200.00	57.128	26.481	.814	1
36	3780.843	2445.052	100.167	2268000	7200.00	52.819	24.677	.746	1
37	3809.590	2395.234	100.167	2280000	7200.00	48.473	22.845	.678	1
38	3838.337	2345.416	100.167	2292000	7200.00	44.088	20.982	.610	1
39	3867.084	2295.598	100.167	2304000	7200.00	39.658	19.084	.543	1
40	3895.832	2245.780	100.167	2316000	7200.00	35.179	17.145	.475	1
41	3924.579	2195.962	100.167	2328000	7200.00	30.642	15.159	.407	1
42	3953.326	2146.144	100.167	2340000	7200.00	26.039	13.117	.339	1
43	3982.073	2096.326	100.167	2352000	7200.00	21.356	11.006	.271	1
44	4010.820	2046.508	100.167	2364000	7200.00	16.575	8.807	.203	1
45	4039.568	1996.690	100.167	2376000	7200.00	11.662	6.484	.136	1
46	4068.315	1946.872	100.167	2388000	7200.00	6.552	3.967	.068	1
47	4097.062	1897.054	100.167	2400000	7200.00	1.000	1.000	.000	1

Table 10.3.2 INPUFF EXAMPLE 1 OUTPUT FROM USER'S GUIDE (cont.)

1200 SEC AVG. CONCENTRATION AT RECEPTORS FOR SIMULATION PERIOD 1200 TO 2400 SECONDS
DUE TO SOURCE NUMBER 1

RECEPTORS X (KM)	Y (KM)	Z (M)	CONCENTRATION (G/M**3)
1.540	1.190	.000	1.129E-07
1.650	1.350	.000	7.536E-06
2.000	1.500	.000	1.231E-04
2.350	1.350	.000	1.310E-05
1.080	1.380	.000	3.230E-10
1.300	1.700	.000	1.912E-06
2.000	2.000	.000	1.771E-04
2.700	1.700	.000	1.284E-05

* *

.67 HR AVG. CONCENTRATION AT RECEPTORS FOR ALL SIMULATION PERIODS
DUE TO SOURCE NUMBER 1

RECEPTORS X (KM)	Y (KM)	Z (M)	CONCENTRATION (G/M**3)
1.540	1.190	.000	6.769E-05
1.650	1.350	.000	8.711E-05
2.000	1.500	.000	7.237E-05
2.350	1.350	.000	6.555E-06
1.080	1.380	.000	9.016E-05
1.300	1.700	.000	1.114E-04
2.000	2.000	.000	9.040E-05
2.700	1.700	.000	6.421E-06

Table 10.3.3 SPILLS INPUT AND OUTPUT

```
            Respond  to  all  questions  with  upper  case
            letters (ENTER: Y or N not y or n).

 Press ENTER to continue >



   ENTER THE CODE NUMBER RELATED TO YOUR PROBLEM:
    1 = CONTINUOUS LEAK (CONSTANT FLOW RATE, E.G. PIPELINE, TANK CAR)
    2 = INSTANTANEOUSLY-FORMED LIQUID POOL
    3   OTHER, E.G. STACK

 (1-3) > 3



   ENTER THE CODE NUMBER OF THE TYPE OF UNITS YOU WANT TO USE:
    1 = METRIC SYSTEM
    2 = ENGLISH SYSTEM

 (1-2) > 1

DO YOU KNOW THE MOLECULAR WEIGHT OF THE SUBSTANCE EMITTED, Y/N ?   N
HOW MANY EMISSION RATES DO YOU HAVE (UP TO 100) ?  1



   THIS PROBLEM WILL BE CONSIDERED AS STEADY STATE
ENTER EMISSION RATE IN KG PER SEC >.1
IS THERE AN ATMOSPHERIC INVERSION LAYER, Y/N ? N
IS THE ATMOSPHERIC STABILITY CLASS KNOWN, Y/N ?Y
ENTER ATMOSPHERIC STABILITY CLASS (1-6) >  3
ENTER WIND SPEED IN METERS PER SEC >   5.63
ENTER STACK HEIGHT ABOVE LOCAL TERRAIN IN METERS > 35.
IS THE PLUME RISE KNOWN(DIST FROM STACK HEIGHT TO PLUME ELEV), Y/N ?   N
ENTER STACK GAS TEMPERATURE IN DEG C > 159.
ENTER AMBIENT TEMPERATURE IN DEG C >   20.
ENTER STACK GAS VOLUMETRIC FLOW RATE IN CUBIC METERS PER SEC > 52.93

ENTER ATMOSPHERIC STABILITY CLASS (1-6) >  3
ENTER WIND SPEED IN METERS PER SEC >   5.63
ENTER STACK HEIGHT ABOVE LOCAL TERRAIN IN METERS > 35.
IS THE PLUME RISE KNOWN(DIST FROM STACK HEIGHT TO PLUME ELEV), Y/N ?   N
ENTER STACK GAS TEMPERATURE IN DEG C > 159.
ENTER AMBIENT TEMPERATURE IN DEG C >   20.
ENTER STACK GAS VOLUMETRIC FLOW RATE IN CUBIC METERS PER SEC > 52.93



  THE EFFECTIVE PLUME HEIGHT IS =  109.90 M
    IT OCCURS AT X =    586.9 M
```

Table 10.3.3 SPILLS INPUT AND OUTPUT

```
          Respond to all questions with upper case
          letters (ENTER: Y or N not y or n).

Press ENTER to continue >



  ENTER THE CODE NUMBER RELATED TO YOUR PROBLEM:
   1   CONTINUOUS LEAK (CONSTANT FLOW RATE, E.G. PIPELINE, TANK CAR)
   2 - INSTANTANEOUSLY-FORMED LIQUID POOL
   3 = OTHER, E.G. STACK

(1-3) > 3



  ENTER THE CODE NUMBER OF THE TYPE OF UNITS YOU WANT TO USE:
   1 = METRIC SYSTEM
   2 = ENGLISH SYSTEM

(1-2) > 1

DO YOU KNOW THE MOLECULAR WEIGHT OF THE SUBSTANCE EMITTED, Y/N ?   N
HOW MANY EMISSION RATES DO YOU HAVE (UP TO 100) ?  1



  THIS PROBLEM WILL BE CONSIDERED AS STEADY STATE
ENTER EMISSION RATE IN KG PER SEC >.1
IS THERE AN ATMOSPHERIC INVERSION LAYER, Y/N ? N
IS THE ATMOSPHERIC STABILITY CLASS KNOWN, Y/N ?Y
ENTER ATMOSPHERIC STABILITY CLASS (1-6) >  3
ENTER WIND SPEED IN METERS PER SEC >   5.63
ENTER STACK HEIGHT ABOVE LOCAL TERRAIN IN METERS > 35.
IS THE PLUME RISE KNOWN(DIST FROM STACK HEIGHT TO PLUME ELEV), Y/N ?   N
ENTER STACK GAS TEMPERATURE IN DEG C > 159.
ENTER AMBIENT TEMPERATURE IN DEG C >   20.
ENTER STACK GAS VOLUMETRIC FLOW RATE IN CUBIC METERS PER SEC > 52.93

ENTER ATMOSPHERIC STABILITY CLASS (1-6) >  3
ENTER WIND SPEED IN METERS PER SEC >   5.63
ENTER STACK HEIGHT ABOVE LOCAL TERRAIN IN METERS > 35.
IS THE PLUME RISE KNOWN(DIST FROM STACK HEIGHT TO PLUME ELEV), Y/N ?   N
ENTER STACK GAS TEMPER    RE IN DEG C > 159.
ENTER AMBIENT TEMPERAT     IN DEG C >   20.
ENTER STACK GAS VOLUMETRIC FLOW RATE IN CUBIC METERS PER SEC > 52.93



 THE EFFECTIVE PLUME HEIGHT IS =  109.90 M
   IT OCCURS AT X =   586.9 M
```

Lesson 11

Class Example

11.1 Modeling Strategies

I. Goal of the Modeling Study

The goal of any PSD ambient air quality study is to demonstrate that the proposed project will not cause or contribute to a violation of either a PSD Increment limit or NAAQS. The PSD rules do not require that the applicant calculate the maximum impact using the most accurate methods. The rules do require that estimates of ambient concentrations be based on the applicable air quality models, data bases, and other requirements specified in the *Guideline on Air Quality Models (Revised)*, 1986 and Supplement A, 1988, 40CFR51.24(l)(1).

II. Procedures

In general, the applicant should use the simplest and most conservative modeling technique as the first approach. If this technique indicates potential violations, a more sophisticated and less conservative modeling technique should be selected. This process continues until either the applicant is successful in demonstrating compliance or the cost/time of the modeling analysis becomes prohibitive and the applicant abandons the project or redefines the projects.

III.. Defining the Project

A. Emission rates (one-hour maximum and annual maximum) for each pollutant

B. Stack parameters

If the project is a large source (e.g. 500 MW power plant), emission rates and stack parameters should be calculated for 50%, 75% and 100% load conditions. The maximum ground-level concentrations for some large sources may occur for conditions other than the maximum operating rate.

C. Location of significant structures (buildings) and dimensions -- Used to determine if building downwash may be a problem.

D. Property lines and fence lines -- If the property is secured by fencing, on-property concentrations may be excluded from the analysis.

IV. Applicable Regulations

A. Federal

B. State and Local

V. Screening Analysis

A. If maximum impacts of the project are less than the modeling levels-of-significance or less than the standard and there are no other sources in the area, no additional modeling is required.

B. If maximum impacts exceed the modeling levels-of-significance, determine radii-of-impact and areas-of-impact using one year of on-site meteorological data or five years of NWS data.

C. If the maximum ground-level impact is less than the modeling level-of-significance for any pollutant, no additional analysis is required for this pollutant.

VI. Areas-of-Impact and Radii-of-Impact

A. Determine the maximum distance that the project exceeds the modeling levels-of-significance for each pollutant (radii-of-impact) using the appropriate models and modeling procedures.

B. On a U.S.G.S. map of the project area, draw a circle using the radius-of-impact distance as the radius. This circle defines the Area-of-Impact of the project.

C. Determine the maximum distance that the project exceeds the modeling levels-of-significance for each pollutant for each direction. Outline this ameba-like figure. This figure is the "actual" area-of-impact.

VII. Emission Inventory of Other Sources

A. An emission inventory must be assembled that includes all sources within 50 kilometers of the Project's Area-of-Impact that has a significant impact within the Project's Area-of-Impact.

B. Sources within the Project's Area-of-Impact can be excluded if their maximum impact is not significant. Their minor impact is assumed to be included with the background.

C. Generally, the emission inventory to be used for a specific project will be assembled by the state or local APC agency and furnished to the applicant.

VIII. Critical Areas

Make a screening analysis of each of the sources on the emission inventory that is in the "actual" area-of-impact. Areas with sources or groups of sources with relatively high concentrations should be defined. These areas, along with the area immediately around the Project should be considered as "Critical Areas". The overall maximum concentration in the "actual" area-of-impact should occur in or near these critical areas.

IX. Critical Periods

Critical periods can be defined by modeling with a coarse receptor grid in and around each of the critical areas and including all of the major sources.

X. Maximum Concentrations

After defining the critical areas and critical periods, model runs using a fine grid (generally 100 meters) and all of the sources can be used to determine the maximum concentrations (or second highest concentrations, if appropriate). Receptors are not required to be placed outside of the "actual" area-of-impact.

XI. Summary

XII. Questions

11.2 Simple PSD Source

I. Defining the Project

A. Project Description -- Industrial natural gas boiler located in an isolated area of Nevada in a Class II area and no Class I areas are near. The terrain is flat. The boiler is located in the center of a fenced property. The fence lines are from 50 meters to 100 meters from the source. All buildings are less than 4 meters tall.

B. Significant Emission rates:

	------ Emission Rate ----		
	Annual	**---- Hourly ---**	
Pollutant	**(tpy)**	**(lb/hr)**	**(g/s)**
Nitrogen Oxides	750	171.2	21.58
Carbon Monoxide	300	68.5	8.63

C. Stack parameters:

Stack Height (m)	10.0
Stack Diameter (m)	1.83
Exit Velocity (m/s)	15.13
Temperature (deg K)	400.0

II. Applicable Regulations

A. PSD -- Nitrogen Oxides

B. PSD -- Carbon Monoxide

III. Stack Height Analysis

The stack is more than 2.5 times the height of any nearby structure and the stack is less than 65 meters. Therefore, all modeling will use the actual stack height and building downwash does not need to be considered.

IV. Model Selection

The source in located in a rural area, the terrain is flat, and the buildings will not create downwash problems. Therefore, the following models are acceptable:

Screening Model .... PTPLU

Refined Short-term Model .... CRSTER

Refined Long-term Model .... ISCLT

V. Screening Analysis -- PTPLU

A. Because ground-level concentrations are directly proportional to emission rates, NO_2 can be modeled and CO values can be ratioed. PTPLU results are presented in Tables 11.1. For comparison, Table 11.2 shows CO values. Using the same procedures outlined in Lesson 8.2, the following conditions should be evaluated:

Looping 4(a)

Coning 4(c)

Fanning 4(d)

Step 4(a) - Looping: The maximum concentration for stability class A is 116 ug/m^3 at 0.44 km downwind.

Step 4(c) - Coning Plume: The maximum concentration for stability class C is 259 ug/m^3 at 0.28 km.

Step 4(d) - Fanning: The maximum concentration for E and F stability class is 102 ug/m^3 at 5.3 km.

Step 5. The highest NO_2 concentration from the above analyses is 259 ug/m^3 from 4(c). The maximum CO concentration is calculated to be (259 x 8.63/21.58)=104 ug/m^3. These values should be used as representing one-hour concentrations. Other averaging periods are as follows:

	Concentrations, ug/m^3	
	NO_2	CO
One-hour Average:	259	104
Three-hour Average (times 0.9):	233	94
Eight-hour Average (times 0.7):	181	73
24-hour Average (times 0.4):	104	42

NO_2 -- Using the above 24-hour NO_2 concentration as a conservative estimate of the maximum annual concentration indicates that the annual NO_2 modeling level-of-significance will be exceeded. The calculated concentration plus the background concentration exceeds the NAAQS. Therefore, a more detailed analysis is required for NO_2.

CO -- Both the one-hour and eight-hour concentrations of CO are much, much less than the levels-of- significance of 2000 ug/m^3 and 500 ug/m^3. Therefore, no additional analysis is required for CO.

NOTE: The maximum concentrations are off-property. What would we do if they were on-property? Answer: (1) If the maxima were less than the levels-of- significance, use the on-property values, otherwise, use CRSTER, MPTER or ISCST limited to off-property distances along with hypothetical meteorological data.

VI. Areas-of-Impact and Radii-of-Impact -- NO_2

Because there are no other sources within 100 kilometers of the project, the Radius-of-Impact and Area-of-Impact are superfluous.

VII. Refined NO_2 Analysis Using ISCLT

A. Selection of Meteorological Data -- The nearest NWS station is Las Vegas. Since neither Las Vegas nor the Project's site is near a large body of water and the terrain is similar, the Las Vegas data should be representative of the Project's site. The ISCLT model uses STAR summaries which are available from NCDC. The modeling will be performed using the NWS data for the years 1981 through 1985. Each year is to be model separately and the highest concentration selected from all five years of analyses.

B. Receptor Locations -- Using the method described in Lesson 8.5, the following distances are selected based on the above distance to maximum of 0.283 kilometers:

Receptor Locations

Ring	Distance Factor	Calculated Distance (km)	Modeled Distance (km)
1	1.0	0.283	0.2
2	1.3	0.368	0.3
3	1.7	0.481	0.4
4	2.3	0.651	0.6
5	3.0	0.849	0.8
6	3.9	1.104	1.1
7	5.2	1.472	1.4
8	6.8	1.924	1.9
9	9.0	2.547	2.5

What distance do we use for the tenth ring?

C. Results -- Output from ISCLT for 1981 through 1985 are presented in Tables 11.3 through 11.7. A summary is shown below:

	-------- Concentrations --------			------- Receptor ---------	
Year	**Project (ug/m^3)**	**Background (ug/m^3)**	**Total (ug/m^3)**	**Direction (deg)**	**Ring Distance (meters)**
1985	6.28	35	41	360	800
1984	4.46	35	39	360	800
1983	7.62	35	43	360	800
1982	5.95	35	41	360	800
1981	6.41	35	41	360	800

The maximum concentration for the five year period is 43 micrograms per cubic meter. This value is less than the NAAQS of 100 micrograms per cubic meter. As can be seen in Tables 11.3 through 11.7, the concentration gradient is small. Therefore, a finer receptor grid should not produce concentrations that are significantly higher than the above values.

For demonstration purposes, Table 11.8 shows an ISCLT printout with a finer grid. The projects maximum concentration increased by only one percent. If modeled concentrations have a higher gradient or if the modeled concentrations are near a standard, a fine grid may be required.

VIII. Summary

IX. Questions

Table 11.2.1 PTPLU SCREENING -- NITROGEN OXIDES

>>>INPUT PARAMETERS<<<

*** TITLE***

OPTIONS	***METEOROLOGY***		***SOURCE***	
IF = 1, USE OPTION	AMBIENT AIR TEMPERATURE =	293.00 (K)	EMISSION RATE =	21.58 (G/SEC)
IF = 0, IGNORE OPTION	MIXING HEIGHT =	5000.00 (M)	STACK HEIGHT =	10.00 (M)
IOPT(1) = 0 (GRAD PLUME RISE)	ANEMOMETER HEIGHT =	10.00 (M)	EXIT TEMP. =	400.00 (K)
IOPT(2) = 1 (STACK DOWNWASH)	WIND PROFILE EXPONENTS =	A: .07, B: .07, C: .10	EXIT VELOCITY =	15.13 (M/SEC)
IOPT(3) = 1 (BUOY. INDUCED DISP.)		D: .15, E: .35, F: .55	STACK DIAM. =	1.83 (M)

IDFLT = 1 (1 = USE DEFAULT, 0 = NOT USE DEFAULT)
MUOR = 2 (1 = URBAN, 2 = RURAL)

RECEPTOR HEIGHT = .00 (M)

>>>CALCULATED PARAMETERS<<<

VOLUMETRIC FLOW = 39.80 (M**3/SEC)   BUOYANCY FLUX PARAMETER = 33.23 (M**4/SEC**3)

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
1	.50	4.9187E+01	1.050	603.0(2)	.50	4.9187E+01	1.050	603.0(2)
1	.80	6.4418E+01	.836	380.6(2)	.80	6.4418E+01	.836	380.6(2)
1	1.00	7.2277E+01	.752	306.5(2)	1.00	7.2277E+01	.752	306.5(2)
1	1.50	8.7322E+01	.622	207.7(2)	1.50	8.7322E+01	.622	207.7(2)
1	2.00	9.8356E+01	.546	158.3	2.00	9.8356E+01	.546	158.3
1	2.50	1.0732E+02	.483	128.6	2.50	1.0732E+02	.483	128.6
1	3.00	1.1594E+02	.438	108.8	3.00	1.1594E+02	.438	108.8

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
2	.50	2.5593E+01	3.360	603.0(2)	.50	2.5593E+01	3.360	603.0(2)
2	.80	3.7087E+01	2.199	380.6(2)	.80	3.7087E+01	2.199	380.6(2)
2	1.00	4.4077E+01	1.803	306.5(2)	1.00	4.4077E+01	1.803	306.5(2)
2	1.50	5.9838E+01	1.262	207.7(2)	1.50	5.9838E+01	1.262	207.7(2)
2	2.00	7.3713E+01	.986	158.3	2.00	7.3713E+01	.986	158.3
2	2.50	8.6113E+01	.817	128.6	2.50	8.6113E+01	.817	128.6
2	3.00	9.7294E+01	.702	108.8	3.00	9.7294E+01	.702	108.8
2	4.00	1.1667E+02	.557	84.1	4.00	1.1667E+02	.557	84.1
2	5.00	1.3284E+02	.468	69.3	5.00	1.3284E+02	.468	69.3

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
3	2.00	6.3107E+01	1.726	158.3	2.00	6.3107E+01	1.726	158.3
3	2.50	7.6200E+01	1.381	128.6	2.50	7.6200E+01	1.381	128.6
3	3.00	8.8430E+01	1.154	108.8	3.00	8.8430E+01	1.154	108.8
3	4.00	1.1055E+02	.877	84.1	4.00	1.1055E+02	.877	84.1
3	5.00	1.2991E+02	.713	69.3	5.00	1.2991E+02	.713	69.3
3	7.00	1.6178E+02	.531	52.4	7.00	1.6178E+02	.531	52.4
3	10.00	1.9573E+02	.405	39.7	10.00	1.9573E+02	.405	39.7
3	12.00	2.2264E+02	.344	33.8	12.00	2.2264E+02	.344	33.8
3	15.00	2.5925E+02	.283	28.0	15.00	2.5925E+02	.283	28.0

Table 11.2.1 PTPLU SCREENING -- NITROGEN OXIDES (cont.)

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
4	.50	4.4317E+00	38.900	603.0(2)	.50	4.4317E+00	38.900	603.0(2)
4	.80	9.1237E+00	18.690	380.6(2)	.80	9.1237E+00	18.690	380.6(2)
4	1.00	1.2660E+01	12.812	306.5(2)	1.00	1.2660E+01	12.812	306.5(2)
4	1.50	2.2243E+01	7.110	207.7(2)	1.50	2.2243E+01	7.110	207.7(2)
4	2.00	3.2475E+01	4.596	158.3	2.00	3.2475E+01	4.596	158.3
4	2.50	4.3199E+01	3.300	128.6	2.50	4.3199E+01	3.300	128.6
4	3.00	5.3763E+01	2.672	108.8	3.00	5.3763E+01	2.672	108.8
4	4.00	7.4120E+01	1.824	84.1	4.00	7.4120E+01	1.824	84.1
4	5.00	9.3735E+01	1.372	69.3	5.00	9.3735E+01	1.372	69.3
4	7.00	1.2895E+02	1.000	52.4	7.00	1.2895E+02	1.000	52.4
4	10.00	1.6160E+02	.743	39.7	10.00	1.6160E+02	.743	39.7
4	12.00	1.8824E+02	.613	33.8	12.00	1.8824E+02	.613	33.8
4	15.00	2.2510E+02	.488	28.0	15.00	2.2510E+02	.488	28.0
4	20.00	2.7562E+02	.379	22.1	20.00	2.7562E+02	.379	22.1

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
5	2.00	1.0179E+02	3.422	85.8	2.00	1.0179E+02	3.422	85.8
5	2.50	9.6049E+01	3.073	80.4	2.50	9.6049E+01	3.073	80.4
5	3.00	9.1492E+01	2.816	76.3	3.00	9.1492E+01	2.816	76.3
5	4.00	8.4547E+01	2.459	70.2	4.00	8.4547E+01	2.459	70.2
5	5.00	7.9366E+01	2.217	65.9	5.00	7.9366E+01	2.217	65.9

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
6	2.00	1.0217E+02	5.328	72.9	2.00	1.0217E+02	5.328	72.9
6	2.50	9.8000E+01	4.697	68.4	2.50	9.8000E+01	4.697	68.4
6	3.00	9.4574E+01	4.246	65.0	3.00	9.4574E+01	4.246	65.0
6	4.00	8.9149E+01	3.627	60.0	4.00	8.9149E+01	3.627	60.0
6	5.00	8.4934E+01	3.217	56.4	5.00	8.4934E+01	3.217	56.4

(1) THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.

(2) THE PLUME IS CALCULATED TO BE AT A HEIGHT WHERE CARE SHOULD BE USED IN INTERPRETING THE COMPUTATION.

(3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 100 KILOMETERS FROM THE SOURCE.

Table 11.2.2 PTPLU SCREENING -- CARBON MONOXIDE

>>>INPUT PARAMETERS<<<

*** TITLE***

OPTIONS
IF = 1, USE OPTION
IF = 0, IGNORE OPTION
IOPT(1) = 0 (GRAD PLUME RISE)
IOPT(2) = 1 (STACK DOWNWASH)
IOPT(3) = 1 (BUOY. INDUCED DISP.)
IDFLT = 1 (1 = USE DEFAULT, 0 = NOT USE DEFAULT)
MUOR = 2 (1 = URBAN, 2 = RURAL)

METEOROLOGY
AMBIENT AIR TEMPERATURE = 293.00 (K)
MIXING HEIGHT = 5000.00 (M)
ANEMOMETER HEIGHT = 10.00 (M)
WIND PROFILE EXPONENTS = A: .07, B: .07, C: .10
D: .15, E: .35, F: .55

SOURCE
EMISSION RATE = 8.63 (G/SEC)
STACK HEIGHT = 10.00 (M)
EXIT TEMP. = 400.00 (K)
EXIT VELOCITY = 15.13 (M/SEC)
STACK DIAM. = 1.83 (M)

Table 11.2.2 PTPLU SCREENING -- CARBON MONOXIDE

RECEPTOR HEIGHT = .00 (M)

>>>CALCULATED PARAMETERS<<<

VOLUMETRIC FLOW = 39.80 (M**3/SEC)
BUOYANCY FLUX PARAMETER = 33.23 (M**4/SEC**3)

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
1	.50	1.9670E+01	1.050	603.0(2)	.50	1.9670E+01	1.050	603.0(2)
1	.80	2.5761E+01	.836	380.6(2)	.80	2.5761E+01	.836	380.6(2)
1	1.00	2.8904E+01	.752	306.5(2)	1.00	2.8904E+01	.752	306.5(2)
1	1.50	3.4921E+01	.622	207.7(2)	1.50	3.4921E+01	.622	207.7(2)
1	2.00	3.9333E+01	.546	158.3	2.00	3.9333E+01	.546	158.3
1	2.50	4.2918E+01	.483	128.6	2.50	4.2918E+01	.483	128.6
1	3.00	4.6363E+01	.438	108.8	3.00	4.6363E+01	.438	108.8

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
2	.50	1.0235E+01	3.360	603.0(2)	.50	1.0235E+01	3.360	603.0(2)
2	.80	1.4831E+01	2.199	380.6(2)	.80	1.4831E+01	2.199	380.6(2)
2	1.00	1.7627E+01	1.803	306.5(2)	1.00	1.7627E+01	1.803	306.5(2)
2	1.50	2.3930E+01	1.262	207.7(2)	1.50	2.3930E+01	1.262	207.7(2)
2	2.00	2.9478E+01	.986	158.3	2.00	2.9478E+01	.986	158.3
2	2.50	3.4437E+01	.817	128.6	2.50	3.4437E+01	.817	128.6
2	3.00	3.8908E+01	.702	108.8	3.00	3.8908E+01	.702	108.8
2	4.00	4.6658E+01	.557	84.1	4.00	4.6658E+01	.557	84.1
2	5.00	5.3125E+01	.468	69.3	5.00	5.3125E+01	.468	69.3

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
3	2.00	2.5237E+01	1.726	158.3	2.00	2.5237E+01	1.726	158.3
3	2.50	3.0473E+01	1.381	128.6	2.50	3.0473E+01	1.381	128.6
3	3.00	3.5364E+01	1.154	108.8	3.00	3.5364E+01	1.154	108.8
3	4.00	4.4210E+01	.877	84.1	4.00	4.4210E+01	.877	84.1
3	5.00	5.1954E+01	.713	69.3	5.00	5.1954E+01	.713	69.3
3	7.00	6.4695E+01	.531	52.4	7.00	6.4695E+01	.531	52.4
3	10.00	7.8276E+01	.405	39.7	10.00	7.8276E+01	.405	39.7
3	12.00	8.9035E+01	.344	33.8	12.00	8.9035E+01	.344	33.8
3	15.00	1.0367E+02	.283	28.0	15.00	1.0367E+02	.283	28.0

Table 11.2.2 PTPLU SCREENING -- CARBON MONOXIDE (cont.)

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
4	.50	1.7723E+00	38.900	603.0(2)	.50	1.7723E+00	38.900	603.0(2)
4	.80	3.6486E+00	18.690	380.6(2)	.80	3.6486E+00	18.690	380.6(2)
4	1.00	5.0629E+00	12.812	306.5(2)	1.00	5.0629E+00	12.812	306.5(2)
4	1.50	8.8951E+00	7.110	207.7(2)	1.50	8.8951E+00	7.110	207.7(2)
4	2.00	1.2987E+01	4.596	158.3	2.00	1.2987E+01	4.596	158.3
4	2.50	1.7276E+01	3.300	128.6	2.50	1.7276E+01	3.300	128.6
4	3.00	2.1500E+01	2.672	108.8	3.00	2.1500E+01	2.672	108.8
4	4.00	2.9641E+01	1.824	84.1	4.00	2.9641E+01	1.824	84.1
4	5.00	3.7486E+01	1.372	69.3	5.00	3.7486E+01	1.372	69.3
4	7.00	5.1567E+01	1.000	52.4	7.00	5.1567E+01	1.000	52.4
4	10.00	6.4625E+01	.743	39.7	10.00	6.4625E+01	.743	39.7
4	12.00	7.5278E+01	.613	33.8	12.00	7.5278E+01	.613	33.8
4	15.00	9.0019E+01	.488	28.0	15.00	9.0019E+01	.488	28.0
4	20.00	1.1022E+02	.379	22.1	20.00	1.1022E+02	.379	22.1

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
5	2.00	4.0707E+01	3.422	85.8	2.00	4.0707E+01	3.422	85.8
5	2.50	3.8411E+01	3.073	80.4	2.50	3.8411E+01	3.073	80.4
5	3.00	3.6588E+01	2.816	76.3	3.00	3.6588E+01	2.816	76.3
5	4.00	3.3811E+01	2.459	70.2	4.00	3.3811E+01	2.459	70.2
5	5.00	3.1739E+01	2.217	65.9	5.00	3.1739E+01	2.217	65.9

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
6	2.00	4.0860E+01	5.328	72.9	2.00	4.0860E+01	5.328	72.9
6	2.50	3.9191E+01	4.697	68.4	2.50	3.9191E+01	4.697	68.4
6	3.00	3.7821E+01	4.246	65.0	3.00	3.7821E+01	4.246	65.0
6	4.00	3.5651E+01	3.627	60.0	4.00	3.5651E+01	3.627	60.0
6	5.00	3.3966E+01	3.217	56.4	5.00	3.3966E+01	3.217	56.4

(1) THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.

(2) THE PLUME IS CALCULATED TO BE AT A HEIGHT WHERE CARE SHOULD BE USED IN INTERPRETING THE COMPUTATION.

(3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 100 KILOMETERS FROM THE SOURCE.

Table 11.2.3 Annual NOx - 1981

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	200.000	300.000	400.000	600.000	800.000	1100.000	1400.000	1900.000	2500.000
	- CONCENTRATION -								
360.000	0.209959	1.440396	3.487810	5.670424	> 6.407754 <	6.224385	5.537522	4.514999	3.591261
350.000	0.133032	0.910836	2.224149	3.678344	4.165321	4.070429	3.628505	2.962670	2.360574
340.000	0.080069	0.491227	1.141440	1.826743	2.033977	1.972719	1.753580	1.426399	1.135298
330.000	0.057096	0.346258	0.798618	1.259232	1.386317	1.332138	1.182589	0.958770	0.761772
320.000	0.042896	0.279704	0.674045	1.089478	1.205574	1.164109	1.037163	0.842702	0.670714
310.000	0.036604	0.263513	0.647726	1.045871	1.143860	1.084633	0.954555	0.762857	0.599018
300.000	0.034504	0.292197	0.710040	1.116718	1.185630	1.081808	0.924757	0.712361	0.542662
290.000	0.038461	0.340360	0.819338	1.266437	1.327458	1.189726	1.002022	0.754663	0.561821
280.000	0.045885	0.388932	0.980763	1.590846	1.724328	1.605354	1.384496	1.064896	0.800977
270.000	0.063823	0.495427	1.236949	1.981390	2.166235	2.040780	1.774727	1.375340	1.037807
260.000	0.054461	0.475817	1.206703	1.961217	2.139610	2.022061	1.765088	1.377958	1.048427
250.000	0.059220	0.535849	1.308945	2.034549	2.181401	2.037545	1.771772	1.384123	1.057383
240.000	0.059565	0.580356	1.432793	2.252953	2.409110	2.239939	1.939446	1.505969	1.143123
230.000	0.073341	0.702952	1.691807	2.604242	2.756652	2.530452	2.171604	1.666861	1.251005
220.000	0.071611	0.693177	1.675451	2.580141	2.729676	2.506765	2.152915	1.655241	1.244147
210.000	0.053037	0.547004	1.378190	2.175858	2.325175	2.168141	1.884036	1.472223	1.123333
200.000	0.052528	0.509135	1.271988	1.977122	2.112510	1.980866	1.732355	1.368989	1.056883
190.000	0.068099	0.569550	1.380308	2.154015	2.310693	2.174078	1.903266	1.506688	1.166145
180.000	0.099387	0.715302	1.625008	2.424203	2.577935	2.402546	2.092706	1.650301	1.275394
170.000	0.065355	0.516209	1.244964	1.958449	2.120299	2.004340	1.756813	1.393500	1.080860
160.000	0.044760	0.389498	0.981116	1.575727	1.725287	1.637391	1.437688	1.142372	0.886760
150.000	0.035544	0.294886	0.767775	1.276605	1.429079	1.389187	1.239903	1.005020	0.793868
140.000	0.031082	0.219893	0.592788	1.026202	1.185899	1.194535	1.092503	0.911844	0.738296
130.000	0.032140	0.182888	0.491160	0.861677	1.021749	1.071065	1.013447	0.888230	0.752992
120.000	0.037186	0.156118	0.420846	0.756933	0.926041	1.025499	1.016193	0.951352	0.852937
110.000	0.047535	0.161266	0.419802	0.744474	0.935468	1.094026	1.133840	1.129400	1.063229
100.000	0.069055	0.206965	0.517182	0.928527	1.207493	1.492887	1.608780	1.680563	1.631787
90.000	0.099012	0.280833	0.667909	1.164176	1.538177	1.944696	2.133249	2.274572	2.231105
80.000	0.097362	0.347614	0.875883	1.555030	1.990982	2.403154	2.547060	2.618743	2.511207
70.000	0.111186	0.478193	1.193486	2.053932	2.562622	2.964072	3.057358	3.045242	2.848480
60.000	0.127489	0.669489	1.658172	2.804071	3.332168	3.590694	3.511250	3.289723	2.951229
50.000	0.170733	1.015791	2.382461	3.804829	4.300434	4.309884	3.995362	3.502737	2.989655
40.000	0.174176	1.092415	2.577751	4.137195	4.644268	4.567564	4.151396	3.532216	2.935060
30.000	0.144882	0.949526	2.329789	3.859972	4.388686	4.345817	3.945380	3.336766	2.752897
20.000	0.143546	0.959506	2.363652	3.929090	4.484722	4.432889	4.006986	3.354722	2.735770
10.000	0.160305	1.117364	2.786748	4.686561	5.354301	5.280375	4.740420	3.917537	3.156094

Table 11.2.4 Annual NOx - 1982

**** ISCLT ************** ISCLT CLASS EXAMPLE SIMPLE PSD LESSON 11 - 1982 ********* PAGE 7 ****

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

- CONCENTRATION -

Y AXIS (AZIMUTH BEARING, DEGREES)	200.000	300.000	400.000	600.000	800.000	1100.000	1400.000	1900.000	2500.000
360.000	0.204261	1.283458	3.138148	5.224179	> 5.952575 <	5.902089	5.366311	4.533796	3.736931
350.000	0.127087	0.848664	2.113136	3.567202	4.042112	3.999051	3.624355	3.050391	2.510293
340.000	0.071125	0.524817	1.270941	2.051154	2.244080	2.156785	1.923437	1.591364	1.296219
330.000	0.049993	0.388585	0.933850	1.467427	1.568922	1.477512	1.306050	1.069141	0.864054
320.000	0.039852	0.313176	0.749830	1.167328	1.239719	1.169124	1.037069	0.850790	0.687814
310.000	0.035239	0.280552	0.668786	1.023715	1.075881	1.005231	0.887659	0.722201	0.579640
300.000	0.032628	0.270277	0.655894	1.007794	1.053885	0.973126	0.847945	0.676762	0.535868
290.000	0.036313	0.307399	0.742498	1.130453	1.176065	1.071526	0.921094	0.719889	0.559786
280.000	0.047686	0.434364	1.051528	1.622273	1.692603	1.535533	1.312303	1.014063	0.777825
270.000	0.069898	0.620370	1.450928	2.172660	2.248881	2.017849	1.711962	1.310895	0.996305
260.000	0.057877	0.539506	1.317657	2.064991	2.170461	1.977178	1.693506	1.308151	0.997524
250.000	0.061185	0.543370	1.318197	2.047854	2.153510	1.965082	1.688162	1.308425	0.997570
240.000	0.055467	0.517234	1.314943	2.135013	2.290148	2.119711	1.829527	1.422138	1.085447
230.000	0.056130	0.541328	1.417576	2.337833	2.536690	2.357151	2.032534	1.576579	1.201282
220.000	0.055786	0.537195	1.408344	2.323506	2.527438	2.360789	2.042458	1.590356	1.214799
2[illegible]000	0.053532	0.502589	1.283610	2.090398	2.265852	2.134546	1.862897	1.465556	1.126933
20[illegible]00	0.059534	0.531969	1.304950	2.053031	2.205292	2.078703	1.822219	1.444630	1.117594
190.000	0.064495	0.588192	1.477737	2.393355	2.601187	2.469697	2.172360	1.733218	1.350087
180.000	0.085104	0.734299	1.795919	2.836531	3.074277	2.900121	2.543902	2.029227	1.583000
170.000	0.056003	0.508155	1.322652	2.221908	2.466431	2.372878	2.098938	1.688550	1.325965
160.000	0.038525	0.356049	0.978303	1.706728	1.936005	1.884949	1.676612	1.357243	1.071161
150.000	0.032770	0.314943	0.878720	1.550352	1.763308	1.725115	1.541046	1.256651	0.999037
140.000	0.034103	0.337846	0.908225	1.550946	1.739643	1.690772	1.511915	1.239051	0.990670
130.000	0.036613	0.314579	0.824472	1.381341	1.545671	1.515081	1.373384	1.152686	0.945542
120.000	0.040250	0.223546	0.584016	1.005026	1.157114	1.194011	1.129429	1.007435	0.874038
110.000	0.049621	0.190409	0.466902	0.785666	0.930073	1.019164	1.017277	0.977654	0.903416
100.000	0.062749	0.209376	0.509498	0.882895	1.077620	1.240114	1.287622	1.304754	1.253192
90.000	0.083091	0.258191	0.604802	1.026288	1.272504	1.501088	1.594567	1.663931	1.626639
80.000	0.098109	0.323579	0.770409	1.331268	1.635419	1.894315	1.976076	2.019760	1.948271
70.000	0.126681	0.443966	1.027277	1.722233	2.088427	2.365246	2.432130	2.442455	2.318744
60.000	0.129600	0.557856	1.334098	2.254556	2.660002	2.873101	2.838873	2.719678	2.501695
50.000	0.143228	0.770182	1.816500	2.964575	3.381234	3.461416	3.283483	2.989202	2.648251
40.000	0.141502	0.842620	2.009251	3.283316	3.704090	3.711694	3.450067	3.051083	2.637882
30.000	0.130059	0.827011	1.993986	3.262707	3.652182	3.613495	3.315258	2.874969	2.444320
20.000	0.137378	0.900061	2.154440	3.499382	3.900446	3.822664	3.472866	2.960153	2.472587
10.000	0.156214	1.015877	2.522619	4.263341	4.846396	4.817505	4.387508	3.726223	3.093159

Table 11.2.5 Annual NOx - 1983

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ISCLT (DATED 88167)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 1.  GUIDELINE MODELS
IN UNAMAP (VERSION 6) JAN. 88.

**** ISCLT ************** ISCLT CLASS EXAMPLE SIMPLE PSD LESSON 11 - 1983                    ********* PAGE      1 ****

                              - ISCLT INPUT DATA -

     NUMBER OF SOURCES =    1
     NUMBER OF X AXIS GRID SYSTEM POINTS =    9
     NUMBER OF Y AXIS GRID SYSTEM POINTS =   36
     NUMBER OF SPECIAL POINTS =    0
     NUMBER OF SEASONS =   1
     NUMBER OF WIND SPEED CLASSES =   6
     NUMBER OF STABILITY CLASSES =   6
     NUMBER OF WIND DIRECTION CLASSES =  16
     FILE NUMBER OF DATA FILE USED FOR REPORTS =   1
     THE PROGRAM IS RUN IN RURAL MODE
     CONCENTRATION (DEPOSITION) UNITS CONVERSION FACTOR =0.10000000E+07
     ACCELERATION OF GRAVITY (METERS/SEC**2) =  9.800
     HEIGHT OF MEASUREMENT OF WIND SPEED (METERS) =  10.000
     CORRECTION ANGLE FOR GRID SYSTEM VERSUS DIRECTION DATA NORTH (DEGREES) =   0.000
     DECAY COEFFICIENT =0.00000000E+00
     PROGRAM OPTION SWITCHES = 1, 2, 2, 0, 0, 3, 2, 2, 3, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 1, 1, 0,
     ALL SOURCES ARE USED TO FORM SOURCE COMBINATION  1
       RANGE X AXIS GRID SYSTEM POINTS (METERS )=     200.00,     300.00,     400.00,     600.00,     800.00,    1100.00,
         1400.00,    1900.00,    2500.00,
 AZIMUTH BEARING Y AXIS GRID SYSTEM POINTS (DEGREES)=      10.00,      20.00,      30.00,      40.00,      50.00,      60.00,
           70.00,      80.00,      90.00,     100.00,     110.00,     120.00,     130.00,     140.00,     150.00,     160.00,
          170.00,     180.00,     190.00,     200.00,     210.00,     220.00,     230.00,     240.00,     250.00,     260.00,
          270.00,     280.00,     290.00,     300.00,     310.00,     320.00,     330.00,     340.00,     350.00,     360.00,

                    - AMBIENT AIR TEMPERATURE (DEGREES KELVIN) -
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	STABILITY CATEGORY 1	STABILITY CATEGORY 2	STABILITY CATEGORY 3	STABILITY CATEGORY 4	STABILITY CATEGORY 5	STABILITY CATEGORY 6
SEASON 1	302.9000	298.3000	295.7000	292.5000	289.4000	286.6000

Table 11.2.5 Annual NOx - 1983 (cont.)

- MIXING LAYER HEIGHT (METERS) -

SEASON 1

	WIND SPEED CATEGORY 1	WIND SPEED CATEGORY 2	WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4	WIND SPEED CATEGORY 5	WIND SPEED CATEGORY 6
STABILITY CATEGORY 1	0.270490E+04	0.292450E+04	0.292450E+04	0.292450E+04	0.292450E+04	0.292450E+04
STABILITY CATEGORY 2	0.140900E+04	0.234690E+04	0.306420E+04	0.306420E+04	0.306420E+04	0.306420E+04
STABILITY CATEGORY 3	0.107010E+04	0.151020E+04	0.273520E+04	0.339260E+04	0.346670E+04	0.336300E+04
STABILITY CATEGORY 4	0.683700E+03	0.109350E+04	0.208250E+04	0.322070E+04	0.297900E+04	0.280540E+04
STABILITY CATEGORY 5	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05
STABILITY CATEGORY 6	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05	0.100000E+05

**** ISCLT ************* ISCLT CLASS EXAMPLE SIMPLE PSD LESSON 11 - 1983 ******** PAGE 2 ****

- ISCLT INPUT DATA (CONT.) -

- FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY -
SEASON 1
STABILITY CATEGORY 1

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.5000MPS)	WIND SPEED CATEGORY 2 (2.5000MPS)	WIND SPEED CATEGORY 3 (4.3000MPS)	WIND SPEED CATEGORY 4 (6.8000MPS)	WIND SPEED CATEGORY 5 (9.5000MPS)	WIND SPEED CATEGORY 6 (12.5000MPS)
0.000	0.00014000	0.00079999	0.00000000	0.00000000	0.00000000	0.00000000
22.500	0.00002000	0.00079999	0.00000000	0.00000000	0.00000000	0.00000000
45.000	0.00002000	0.00090999	0.00000000	0.00000000	0.00000000	0.00000000
67.500	0.00002000	0.00056999	0.00000000	0.00000000	0.00000000	0.00000000
90.000	0.00001000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
112.500	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
135.000	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
157.500	0.00013000	0.00034000	0.00000000	0.00000000	0.00000000	0.00000000
180.000	0.00025000	0.00046000	0.00000000	0.00000000	0.00000000	0.00000000

**** ISCLT ************* ISCLT CLASS EXAMPLE SIMPLE PSD LESSON 11 - 1983 ******** PAGE 6 ****

- SOURCE INPUT DATA -

C A R D	T A P E	SOURCE NUMBER	SOURCE TYPE	X COORDINATE (M)	Y COORDINATE (M)	EMISSION HEIGHT (M)	BASE ELEV-ATION (M)	- SOURCE DETAILS DEPENDING ON TYPE -
X		1	STACK	0.00	0.00	10.00	0.00	GAS EXIT TEMP (DEG K)= 400.00, GAS EXIT VEL. (M/SEC)= 15.13, STACK DIAMETER (M)= 1.830, HEIGHT OF ASSO. BLDG. (M)= 0.00, WIDTH OF ASSO. BLDG. (M)= 0.00, WAKE EFFECTS FLAG = 0

- SOURCE STRENGTHS (GRAMS PER SEC) -

SEASON 1	SEASON 2	SEASON 3	SEASON 4
2.15800E+01			

Table 11.2.5 Annual NOx - 1983 (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

- CONCENTRATION -

Y AXIS (AZIMUTH BEARING, DEGREES)	200.000	300.000	400.000	600.000	800.000	1100.000	1400.000	1900.000	2500.000
360.000	0.312855	1.832042	4.228500	6.795356	> 7.616764 <	7.413198	6.642329	5.488341	4.422209
350.000	0.185915	1.146855	2.758550	4.604788	5.224747	5.159522	4.651362	3.864398	3.125821
340.000	0.088496	0.600533	1.521193	2.601554	2.986603	2.989045	2.714996	2.269439	1.841407
330.000	0.056866	0.408258	1.053887	1.807161	2.074805	2.083223	1.899016	1.589430	1.289235
320.000	0.042037	0.317825	0.816365	1.387692	1.582703	1.589376	1.449594	1.209940	0.979011
310.000	0.034142	0.262147	0.669052	1.116353	1.258708	1.250229	1.135126	0.939956	0.755727
300.000	0.025906	0.205144	0.545914	0.934022	1.049767	1.035209	0.933896	0.766999	0.613884
290.000	0.024325	0.195077	0.521586	0.880709	0.978110	0.946046	0.843128	0.682276	0.540344
280.000	0.027931	0.247622	0.657663	1.108596	1.225816	1.178467	1.046852	0.842948	0.662869
270.000	0.037740	0.337466	0.860024	1.385758	1.511050	1.431290	1.262017	1.008372	0.786836
260.000	0.043582	0.415631	1.048198	1.698789	1.839920	1.736743	1.524284	1.210010	0.940225
250.000	0.062923	0.570122	1.360232	2.098629	2.232062	2.074414	1.803188	1.417097	1.093974
240.000	0.060563	0.581302	1.419819	2.239387	2.392608	2.231117	1.938638	1.518548	1.166968
230.000	0.064802	0.622537	1.517538	2.377271	2.535638	2.355720	2.039021	1.586990	1.211194
220.000	0.061648	0.596980	1.466706	2.306365	2.461956	2.281523	1.967685	1.522788	1.155797
210.000	0.047820	0.491329	1.250404	2.016304	2.162305	2.000609	1.718367	1.321827	0.998393
200.000	0.046192	0.464956	1.186660	1.906141	2.045673	1.887193	1.616579	1.240848	0.936408
190.000	0.045696	0.480641	1.279643	2.135612	2.339926	2.214121	1.932347	1.518643	1.167644
180.000	0.057663	0.575388	1.506438	2.461172	2.703619	2.573531	2.263210	1.799672	1.397313
170.000	0.048700	0.482941	1.282698	2.162150	2.390750	2.278800	2.000220	1.588363	1.233779
160.000	0.052427	0.470236	1.194451	1.964638	2.152976	2.020086	1.756077	1.383407	1.070750
150.000	0.060638	0.495928	1.242458	2.047491	2.241443	2.100586	1.822978	1.435759	1.111588
140.000	0.083574	0.598404	1.432648	2.294397	2.487923	2.314514	2.004101	1.577398	1.220398
130.000	0.082011	0.552668	1.316256	2.109799	2.299855	2.163584	1.894481	1.516891	1.193693
120.000	0.052168	0.327268	0.847344	1.463626	1.662497	1.650069	1.501817	1.264318	1.040300
110.000	0.042257	0.212264	0.577063	1.033053	1.224008	1.297684	1.247366	1.129793	0.990206
100.000	0.055398	0.217197	0.563221	1.000572	1.214940	1.372515	1.395330	1.367461	1.275896
90.000	0.075999	0.256505	0.614739	1.025423	1.261360	1.490131	1.579501	1.633965	1.581498
80.000	0.073348	0.245940	0.607422	1.070585	1.354123	1.636422	1.745144	1.809534	1.751031
70.000	0.081034	0.274227	0.668108	1.183570	1.524957	1.854383	1.979644	2.045469	1.963787
60.000	0.101359	0.358764	0.840996	1.454182	1.807867	2.103616	2.179587	2.186753	2.064111
50.000	0.141798	0.519510	1.140990	1.858142	2.206062	2.420933	2.418910	2.337808	2.154637
40.000	0.164163	0.679734	1.489209	2.377287	2.723342	2.836024	2.723605	2.509821	2.233782
30.000	0.189044	0.930239	2.011011	3.089705	3.398192	3.343969	3.074396	2.675947	2.277685
20.000	0.221460	1.191639	2.587168	3.962878	4.312863	4.144374	3.720632	3.118502	2.561466
10.000	0.244515	1.416465	3.262578	5.267785	5.876699	5.731613	5.149207	4.284505	3.482732

Table 11.2.6 Annual NOx - 1984

**** ISCLT ************* ISCLT CLASS EXAMPLE SIMPLE PSD LESSON 11 - 1984 ******** PAGE 7 ****

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	200.000	300.000	400.000	600.000	800.000	1100.000	1400.000	1900.000	2500.000
	- CONCENTRATION -								
360.000	0.168689	1.063054	2.496799	3.987669	> 4.461368 <	4.382517	3.969523	3.325561	2.714352
350.000	0.108395	0.729687	1.739894	2.822220	3.152508	3.095982	2.795697	2.329991	1.894294
340.000	0.067918	0.490387	1.131417	1.768306	1.932787	1.857944	1.653132	1.351070	1.081550
330.000	0.050502	0.378734	0.867267	1.323354	1.421305	1.350363	1.196118	0.970657	0.772307
320.000	0.042235	0.315108	0.716422	1.068960	1.132860	1.078663	0.961236	0.785145	0.628296
310.000	0.038603	0.289878	0.658475	0.963903	1.000575	0.936192	0.828791	0.672768	0.536952
300.000	0.035890	0.288660	0.668516	0.982995	1.000420	0.909554	0.789914	0.629136	0.496768
290.000	0.040950	0.335275	0.772002	1.123133	1.127489	1.000036	0.852425	0.665035	0.518003
280.000	0.058798	0.477622	1.087692	1.584784	1.596878	1.413152	1.198478	0.927735	0.717445
270.000	0.089046	0.681611	1.491322	2.098629	2.099536	1.841360	1.551876	1.193283	0.917803
260.000	0.077920	0.670044	1.563882	2.349614	2.431007	2.202968	1.888527	1.469333	1.131805
250.000	0.087982	0.766583	1.800057	2.707430	2.836665	2.600021	2.242516	1.750680	1.345773
240.000	0.084205	0.777614	1.883592	2.927078	3.104726	2.878540	2.495048	1.953525	1.501254
230.000	0.093519	0.860798	2.078149	3.214070	3.410483	3.158774	2.734349	2.135473	1.635730
220.000	0.089838	0.833094	2.019306	3.133672	3.331843	3.082824	2.663400	2.075459	1.586560
210.000	0.068735	0.679952	1.686524	2.676245	2.860572	2.643146	2.277501	1.771129	1.352539
200.000	0.065826	0.640309	1.565907	2.447844	2.605492	2.385088	2.042495	1.581245	1.205022
190.000	0.067268	0.666244	1.648783	2.610392	2.786471	2.568669	2.210546	1.723228	1.321660
180.000	0.086512	0.797138	1.896239	2.887799	3.047857	2.787871	2.395734	1.869630	1.436959
170.000	0.078837	0.676901	1.645986	2.603451	2.781580	2.562467	2.201492	1.710808	1.306691
160.000	0.090402	0.661506	1.558233	2.433881	2.595818	2.371593	2.023523	1.555236	1.174053
150.000	0.075517	0.592715	1.418125	2.242485	2.400162	2.206648	1.894174	1.470334	1.121104
140.000	0.061187	0.559175	1.337574	2.097672	2.238663	2.067746	1.790964	1.412907	1.095451
130.000	0.053827	0.475750	1.133080	1.770390	1.901551	1.784866	1.574034	1.279156	1.023206
120.000	0.044601	0.288510	0.723804	1.206496	1.358945	1.356107	1.251636	1.083750	0.918620
110.000	0.047989	0.197660	0.499102	0.867168	1.041046	1.130433	1.111374	1.044802	0.947706
100.000	0.062923	0.212574	0.558009	1.025517	1.290695	1.484397	1.517814	1.496353	1.402437
90.000	0.084963	0.259683	0.677252	1.239974	1.596541	1.882688	1.962946	1.980234	1.880217
80.000	0.096975	0.286147	0.737744	1.362758	1.760876	2.115333	2.234363	2.295043	2.212581
70.000	0.121652	0.361298	0.887255	1.576821	2.027545	2.439123	2.593278	2.688142	2.602258
60.000	0.128150	0.467018	1.141788	1.992718	2.457509	2.802996	2.868924	2.853294	2.689998
50.000	0.146457	0.666705	1.563866	2.589151	3.044807	3.251246	3.177293	2.990388	2.708978
40.000	0.147254	0.760568	1.779609	2.909084	3.338426	3.430702	3.250616	2.937385	2.574616
30.000	0.139459	0.807675	1.869288	2.994856	3.342782	3.310403	3.044500	2.643605	2.244497
20.000	0.145173	0.897875	2.043473	3.202099	3.508459	3.379641	3.038641	2.549138	2.095147
10.000	0.142328	0.912122	2.163878	3.513282	3.920157	3.845338	3.479351	2.922434	2.397174

Table 11.2.7 Annual NOx - 1985

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

Y AXIS (AZIMUTH BEARING, DEGREES) \ - X AXIS (RANGE , METERS) -	200.000	300.000	400.000	600.000	800.000	1100.000	1400.000	1900.000	2500.000
	- CONCENTRATION -								
360.000	0.234847	1.480053	3.489226	5.598974	> 6.281126 <	6.121676	5.488577	4.538828	3.659932
350.000	0.147440	0.969354	2.324293	3.798762	4.260185	4.153585	3.712255	3.052369	2.450596
340.000	0.085552	0.579132	1.352005	2.145880	2.354717	2.243838	1.971744	1.583291	1.247451
330.000	0.058784	0.416721	0.981807	1.543365	1.670696	1.566425	1.363388	1.078945	0.839678
320.000	0.041905	0.324648	0.797020	1.268333	1.369399	1.284521	1.119879	0.887761	0.692589
310.000	0.035574	0.287006	0.708681	1.118729	1.195693	1.113964	0.971599	0.771410	0.603133
300.000	0.034961	0.281731	0.680839	1.063597	1.124197	1.044371	0.913396	0.728458	0.571574
290.000	0.040683	0.334457	0.783661	1.187721	1.234223	1.129796	0.981100	0.775268	0.602881
280.000	0.057564	0.517916	1.197206	1.787682	1.838605	1.652053	1.407720	1.080035	0.816397
270.000	0.087670	0.766885	1.707801	2.449479	2.484251	2.194021	1.843750	1.387197	1.029311
260.000	0.077334	0.728458	1.701190	2.568917	2.660467	2.394004	2.031374	1.542029	1.150788
250.000	0.089062	0.805489	1.868093	2.802227	2.912700	2.627667	2.232387	1.697038	1.267833
240.000	0.082276	0.782062	1.849996	2.830610	2.961475	2.684667	2.283504	1.737977	1.299799
230.000	0.085536	0.813247	1.903633	2.880167	3.003193	2.708369	2.294663	1.741032	1.300061
220.000	0.079100	0.746985	1.757513	2.670045	2.802124	2.545542	2.166016	1.653374	1.241476
210.000	0.055032	0.545127	1.360430	2.171981	2.345799	2.193424	1.899552	1.479029	1.127769
200.000	0.048864	0.461246	1.175456	1.908078	2.100669	2.001652	1.755611	1.388695	1.072466
190.000	0.049651	0.476173	1.255150	2.108563	2.332474	2.228549	1.958719	1.554807	1.204267
180.000	0.063077	0.568743	1.467398	2.407656	2.638781	2.492634	2.181289	1.727112	1.336074
170.000	0.061267	0.475092	1.230780	2.086811	2.314441	2.202882	1.929934	1.527128	1.179271
160.000	0.073146	0.456062	1.123218	1.865084	2.063272	1.947980	1.696606	1.332394	1.021768
150.000	0.060797	0.395380	0.980466	1.637584	1.816113	1.726585	1.514710	1.205426	0.938417
140.000	0.046405	0.351429	0.872002	1.441963	1.595715	1.530052	1.359193	1.106676	0.882923
130.000	0.041587	0.305135	0.752793	1.228506	1.362661	1.336953	1.219706	1.035347	0.860025
120.000	0.042068	0.226088	0.570432	0.954467	1.094196	1.149626	1.107697	1.007623	0.884343
110.000	0.050141	0.194237	0.482098	0.804037	0.962834	1.098593	1.126516	1.105787	1.027989
100.000	0.065359	0.190748	0.496198	0.904635	1.171945	1.441591	1.548015	1.608250	1.556311
90.000	0.087669	0.216830	0.565141	1.055237	1.437356	1.835402	2.016562	2.150825	2.113292
80.000	0.083896	0.240132	0.648038	1.219351	1.619000	2.013824	2.171194	2.274434	2.215449
70.000	0.089303	0.307748	0.812523	1.469238	1.899112	2.280673	2.410558	2.473053	2.371897
60.000	0.090310	0.428785	1.153144	2.078299	2.547972	2.826803	2.816132	2.701324	2.475019
50.000	0.103678	0.662387	1.714061	2.943787	3.431646	3.527895	3.321519	2.967829	2.575523
40.000	0.136397	0.867628	2.109208	3.490809	3.956376	3.919995	3.581794	3.071976	2.574396
30.000	0.218450	1.146999	2.467008	3.793621	4.151016	3.984456	3.562191	2.971053	2.435091
20.000	0.278971	1.397229	2.862133	4.233385	4.548777	4.285501	3.781147	3.092977	2.488696
10.000	0.232704	1.343232	3.034547	4.809676	5.332230	5.161537	4.607435	3.800912	3.067798

Table 11.2.8 Annual NOx - 1983 Fine Grid

**** ISCLT ************* ISCLT CLASS EXAMPLE SIMPLE PSD LESSON 11 - 1983 FINE GRID ******** PAGE 7 ****

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM ALL SOURCES COMBINED **

- GRID SYSTEM RECEPTORS -

- X AXIS (RANGE , METERS) -

Y AXIS (AZIMUTH BEARING, DEGREES)	600.000	650.000	700.000	750.000	800.000	850.000	900.000	950.000	1000.000
	- CONCENTRATION -								
10.000	5.267785	5.501725	5.675491	5.797643	5.876699	5.920128	5.934232	5.924418	5.895292
5.000	6.017914	6.292352	6.497225	6.641966	6.736406	6.788978	6.806981	6.796709	6.763539
360.000	6.795356	7.108492	7.342762	7.508433	7.616764	7.677130	> 7.697806 <	7.685969	7.647765
355.000	5.695452	5.966434	6.171072	6.317937	6.416201	6.473719	6.497379	6.493179	6.466269
350.000	4.604788	4.833698	5.008713	5.136698	5.224747	5.279207	5.305590	5.308726	5.292787

Lesson 12

Actual Case Study

I. Defining the Project

A. Project Description -- Widget International plans to build an oil-fired boiler located in an industrialized area of Louisiana. The terrain is flat.

B. The boiler is located in the center of a fenced property. The distance to the fence lines are as follows:

Widget Fence Lines

Direction From Source to Fence	Distance (m)
North	50
East	100
South	75
West	75

C. Significant Structures:

Widget Buildings

Structure	Distance To Stack (m)	Height (m)	Cross-Wind Dimension (m)	Calculated GEP (m)	$5*L_b$ (m)	Within Influence
Building A	95	23.5	45.0	58.75	117.5	Yes
Silo	35	35.0	9.5	49.25	47.5	Yes
Building B	145	27.4	25.5	65.65	127.5	No

D. Significant Emission rates (we will limit this example to sulfur oxides emissions only):

Widget Emissions

Pollutant	Annual (g/s)	1-Hour (g/s)	3-Hour (g/s)	24-Hour (g/s)
	---------- Averaging Period ----------			
Sulfur Oxides	14.0	16.0	16.0	16.0

E. Stack parameters:

Widget Stack Parameters

UTM - East (km)	673.0
UTM - North (km)	3383.0
Stack Height (m)	42.67
Stack Diameter (m)	1.68
Exit Velocity (m/s)	4.00
Temperature (deg K)	505.2

II. Applicable Regulations -- PSD Sulfur Dioxide

A. Preconstruction Monitoring -- 13 ug/m^3 24-hour average

B. PSD Class II Increment:

Averaging Period	Concentration (ug/m^3)
Annual	20
24-Hour	91
3-Hour	512

C. NAAQS:

Averaging Period	Concentration (ug/m^3)
Annual	80
24-Hour	365
3-Hour	1300

III. Stack Height Analysis

Building B has the greatest GEP but it is more than five "characteristic dimensions" from the stack. Therefore, Building A is the dominate structure. Building downwash must be considered because the stack height is less than GEP.

IV. Model Selection

The source in located in a rural area, the terrain is flat, and building downwash must be considered. Therefore, the following models are acceptable:

Screening Model:	ISCST
Refined Short-term Model:	ISCST
Refined Long-term Model:	ISCLT or ISCST

V. Screening Analysis -- ISCST

A. The same procedures outlined in Lesson 8.2 will be used.

B. Building Input Parameters

As presented in Lesson 8.2, the ISCST model calculates an equivalent diameter from the values entered for building width and length and uses this equivalent diameter as the cross-wind dimension. In order to "force" the model to use the correct cross-wind dimension, pseudo values must be calculated for the building width.

For a Square Building $B_w = B_l$

We will use S as the side length:

$$S = D_{eq} (3.1417/4)^{1/2} = 45.0 (3.1417/4)^{1/2}$$

$$S = 39.88 \text{ meters}$$

By entering 39.88 meters for building width and length the model will calculate an equivalent diameter of 45.0 meter which is the correct cross-wind dimension.

Discussion -- Does the model use the cross-wind dimension in its calculations when the building height is less than the cross-wind dimension? (No.)

C. Step 4.

From Table 8.2.1, a stack height of 42.67 meters indicates that the following conditions should be evaluated:

Looping 4(a)
Coning 4(c)
Fanning 4(d)

The output of the screening run is shown in Table 12.1. The screening results are as follows:

Step 4(a) - Looping: The maximum concentration for stability class A is 133 ug/m^3 at 0.53 kilometers.

Step 4(c) - Coning Plume: The maximum concentration for stability class C is 132 ug/m^3 at 0.43 kilometers.

Step 4(d) - Fanning: The maximum concentration for E and F stability class is 329 ug/m^3 at 0.24 kilometers.

Step 4(f). Downwash - All values above considered downwash.

Step 5. The highest concentration from the above analyses is 329 ug/m^3 from 4(d). This value should be used as representing an one-hour concentration. Other averaging periods are as follows:

Three-hour Average (times 0.9): 296. ug/m^3
24-hour Average (times 0.4): 132. ug/m^3

Step 6. Since the concentrations in Step 5 are greater than the modeling level-of-significance, a refined technique is required. (If the Project was an isolated source, no additional 3-hour analysis would be required. Additional 24-hour analysis is required because the concentration exceeds the PSD increment.)

NOTE: The maximum concentrations are off-property.

VI. Selection of Meteorological Data

The nearest NWS station is Baton Rouge about 15 kilometers from the Project site. Since the terrain near Widget is similar to the terrain near the NWS and no large bodies of water are adjacent to either Widget or the NWS station, the Baton Rouge data should be representative of the Project site. The ISCST model uses hourly preprocessed data. These data can be created with the CRSMET preprocessor program. The most recent five-year data set should be selected. For this class example, the year 1979 will be used.

The ISCLT model uses STAR summaries available from the National Climatic Data Center (NCDC). The modeling will be performed using the years 1979 through 1983. Each year is to be modeled separately and the highest concentration selected from all five years of analyses.

Why does EPA require the most recent five years?

VII. Preconstruction Monitoring

The local agency has determined that a nearby monitor is representative of concentrations in the vicinity of the Project. The applicant is instructed to use a background value of 35 ug/m^3 for annual SO_2, and 47 ug/m^3 for short- term averaging periods. (If preconstruction monitoring data is not available, preconstruction monitoring can be avoided by demonstrating that the Project will not cause an increase in ground-level concentrations that exceeds the monitoring level-of-significance.)

Discussion -- What criteria should an agency use to determine background concentrations?

VIII. Controlling Standards

The background concentrations plus the maximum allowable increment consumptions are less than the NAAQS. Therefore, the increment standards are the controlling limits:

Controlling Standards

Averaging Period	Background Concentration (ug/m^3)	Maximum Allowable Increment Consumption (ug/m^3)	Background Plus Increment (ug/m^3)	NAAQS (ug/m^3)	Controlling Standard Inc. or NAAQS
Annual	35	20	55	80	Increment
24-Hour	47	91	138	365	Increment
3-Hour	47	512	559	1300	Increment

IX. Areas-of-Impact and Radii-of-Impact

In order to determine the sources to be included with the analysis, the area-of-impact must be determined. The area- of-impact is the area within a circle with a radius equal to the radius-of-impact. The results of the screening analysis indicates that the impact from the Project is significant.

A. Coarse-grid Run -- Use ring distances of 1, 5, 10, 15, and 25 kilometers in the ISCST model. Coarse-grid results are shown in Table 12.2 and summarized below:

Radius-of-Impact -- Coarse-grid Run, km

Year	Averaging Period: Annual	3-Hour	24-Hour
1979	5-10	5-10	10-15

Why use ISCST for annual radius-of-impact rather than ISCLT? (Why not. Compare Tables 12.2 and 12.3 with Table 12.4)

B. Fine-grid Run -- Use ring distances of 6, 7, 8, 12, and 14 kilometers. Fine-grid results are shown in Table 12.3 and summarized below:

Radius-of-Impact -- Fine-grid Run, km

Year	Averaging Period Annual	3-Hour	24-Hour
1979	5-6	8-10	12-14

C. Comments -- We would report the radii-of-impact as 6, 10, and 14 kilometers for the annual, 3-hour and 24-hour, respectively. Additional runs can be made to define the radius-of-impact to a more accurate distance. REMEMBER: We are defining the radius-of-impact so that we can determine the sources that must be included. As long as our estimation of the radius-of-impact is conservative, we can use the coarse-grid results.

X. Emission Inventory

A. In general, the state or local agency will supply the emission inventory. The local agency supplied the following data to be used in the Widget analysis.

Emission Inventory

Source No.	UTM Location, km East	North	Emission Rate (g/s)	Height (m)	Diameter (m)	Velocity (m/s)	Temp. (K)
101	668.5	3384.9	41.55	18.2	1.21	18.5	394.

The Ajax Company has received a permit for a major facility near the Project site. This plant is the only other facility that consumes increment.

Therefore, total increment consumption will be calculated by combining the impacts from the Widget plant and the Ajax source. Because the monitoring data does not include contributions from the Ajax plant, the emissions from Ajax must be included in the Widget analyses of total concentrations to be compared with the NAAQS.

B. Screening of inventory sources -- If the sources in the emission inventory include sources with large impacts (major sources) as well as sources with very small impacts (minor sources), the critical locations and critical time periods will be dictated by the major sources. By including only the major sources along with the Project source in full-year runs, significant computer time can be saved. If you have unlimited free computer time on a mainframe, you may wish to include all sources in all runs. After defining the critical times and locations, the final runs to define maximum concentrations should include all sources. Because our project only consists of our source and one other source, no screening is needed.

XI. Refined Analysis -- Annual 1979

A. Actual Area of Impact -- Use ISCLT to determine the actual area of impact of Widget. Results are displayed in Table 12.4.

B. Combined Impacts -- Use ISCLT to determine the maximum combined impact of Ajax and Widget within the actual area of impact from Widget. A partial printout is displayed in Table 12.5. Results are shown below:

Annual Concentrations

Maximum Combined Concentration (ug/m^3)	Contribution From Widget (ug/m^3)	Location, km East	Location, km North	Comment
7.9	0.8	668.5	3384.0	Highest Total
3.7	1.0	669.5	3384.0	Near Ajax
5.4	4.8	673.0	3382.5	Near Widget

C. Discussion of Results -- Which value from above is our maximum annual increment consumption? (5.4)

XII. Refined Analysis -- 3-Hour and 24-Hour Averages

In general, the following analysis is performed as if Widget and Ajax consisted of many sources. (This analysis must be performed for each pollutant and each short-term averaging period.)

A. Critical Areas -- The maximum concentrations will occur either: (1) near Ajax, (2) near Widget, or (3) on a line of interaction passing through Ajax and Widget.

Discussion -- If the emission inventory contained other facilities with many sources, the critical areas would include all areas identified from the screening runs.

B. Critical Periods -- The ISCST model is used to define the critical periods. The only periods that are required to be analyzed are periods when the Project has a significant impact ("actual" area-of-impact). Therefore, we must determine the periods when the Project has a significant impact at each of the critical areas.

C. Analysis of the area near the Project -- 1979

The first step in determining the maximum concentration near the Project is to determine the maximum from the Project alone. Obviously, if the Project (Widget) alone exceeds the increment standard, improvements will have to be made to the Widget source; these would include cleaner fuel, better control equipment, taller stack, etc. Next, determine the maximum from all other sources (Ajax) at the Project. If the sum of Widget and Ajax does not exceed the increment standard, no additional short-term analyses are required at Widget. If either Widget alone or Ajax plus Widget exceed a standard, additional analyses are required for that pollutant and averaging time.

1. Widget Alone:

Input Data -- The receptor spacing is determined using the same methods used in Lesson 8.5. The results of the screening analysis above indicate that the maximum concentration occurred at a downwind distance of 0.24 kilometers. The following ring distances will be used:

Receptors For Widget Analysis

Ring	Factor	Calculated Distance (km)	Modeled Distance (km)
1	1.0	0.240	0.2
2	1.3	0.312	0.3
3	1.7	0.408	0.4
4	2.3	0.552	0.5
5	3.0	0.720	0.7
6	3.9	0.936	0.9
7	5.2	1.248	1.2
8	6.8	1.632	1.6
9	9.0	2.160	2.2

A tenth ring distance is selected of 0.1 kilometers.

Results From Widget Alone Analysis
(See Table 12.6 For Details)

Averaging Period	Concentration (ug/m^3)	------ Location ---- Ring Dist (km)	Direction (deg)	Day,Period
24-Hour				
Highest	95.3	0.2	180	8
2nd-High	80.2	0.2	180	351
3-Hour				
Highest	172.7	0.3	110	21,2
2nd-High	153.2	0.2	120	21,1

2. Ajax at Widget

Input Data -- A single ring of receptors is place at the distance from Ajax to Widget. Receptors are placed along the ring from 45 degrees south of Widget to 45 degrees north of Widget. The receptors are spaced every 10 degrees.

Results of Ajax at Widget Analysis
(See Table 12.7 For Details)

Averaging Period	Concentration (ug/m^3)	------ Location ---- Ring Dist (km)	Direction (deg)	Day,Period
24-Hour				
Highest	22.2	4.8	100	359
3-Hour				
Highest	80.4	4.8	80	187,1

Summary of Preliminary Results at Widget

Averaging Period	-- Concentration, ug/m3 -- Widget	Ajax	Total
24-Hour	80.2	22.2	102.4
3-Hour	153.2	80.4	233.6

Results -- The above table shows the sum of the highest 2nd-high from Widget and the highest from Ajax at Widget for both the 24-hour and 3-hour periods. These totals are a conservative estimate (upper bound) of the combined impacts from Widget and Ajax. The combined 24-hour impact exceeds the 24-hour increment standard. Therefore, additional refinement in the analysis is required for 24-hour impacts. The combined 3-hour impact is much less than the 3-hour increment standard. Therefore, no additional analysis is required for the 3-hour averaging period.

3. Additional 24-hour analyses -- 1979

Even though the sum of Widget and Ajax exceeds the 24-hour increment standard, these maxima do not occur on the same day (day 351 verses day 359). We will make additional runs using both Ajax and Widget to determine their combined maximum.

Receptors. The maximum combined impacts from Widget and Ajax will occur when the wind blows from Ajax toward Widget. Therefore, receptors are placed downwind of Widget. The direction from Ajax to Widget is 113 degrees from north. To be consistent with the receptor placement used in the "Widget alone" case, polar receptors will be used. Using the Widget location as the center of our polar grid places Ajax at -4.5 kilometers east and 1.9 kilometers north.

Results. The 2nd-high 24-hour concentration is 80.2 ug/m^3. The contribution from Ajax to this total is negligible (less then 0.00001). Table 12.8 shows the combined results.

Comment -- It is not unusual for the combined maximum value to be the result of one source dominating.

D. Analysis of the Area near Ajax -- 1979

The analysis of the area near Ajax is conducted in the same manner as the analysis of the area near Widget in the previous section. The first step in determining the maximum concentration near Ajax is to determine the maximums from Ajax alone and Widget alone. If the sum of Widget and Ajax does not exceed the increment standard, no additional short-term analyses are required. If either the 3-hour or 24-hour sum exceeds their respective increment standard, additional analyses are required.

1. Ajax Alone

A screening run using PTPLU indicates that the maximum concentration from Ajax is 322 ug/m^3 and occurs under stability class C at a downwind distance of 0.36 kilometers (see Table 12.9). Therefore, we will use the following ring distances.

Receptor Locations For Ajax Analysis

Ring	Factor	Calculated Distance (km)	Modeled Distance (km)
1	1.0	0.360	0.3
2	1.3	0.468	0.4
3	1.7	0.612	0.6
4	2.3	0.828	0.8
5	3.0	1.080	1.0
6	3.9	1.404	1.4
7	5.2	1.872	1.8
8	6.8	2.448	2.4
9	9.0	3.240	3.2

A tenth ring distance is selected of 0.2 kilometers. We are only interested in concentrations when Widget has a significant impact. Only receptors placed downwind of Ajax when the wind is blowing from Widget, need to be considered. (If the sources were close together, receptors in all directions should be considered.) The line of interaction between Widget and Ajax is 293 degrees from north (also 113 degrees from north). Receptors are placed 90 degrees to either side of the line of interaction, from 200 degrees through 360 to 20 degrees. Note: This technique is only valid for short-term averages.

Results of Ajax Analysis
(See Table 12.10 for details)

Averaging Period	Concentration (ug/m^3)	------ Location ---- Ring Dist (km)	Direction (deg)	Day,Period
24-Hour				
Highest	81.5	0.8	310	303,1
2nd-High	74.5	1.0	300	77,1
3-Hour				
Highest	267.7	0.4	340	170,5
2nd-High	254.1	0.6	340	97,5

Discussion -- Ajax alone does not exceed the increment standards. What would we do if it did? (Determine if Widget has a significant contribution.)

2. Widget at Ajax:

Input Data -- A single ring of receptors is place at the distance from Ajax to Widget. Receptors are placed along the ring from 45 degrees south of the line of interaction to 45 degrees north. The receptors are spaced every 10 degrees.

Results of Widget at Ajax
(See Table 12.11 for details)

Averaging Period	Concentration (ug/m^3)	------ Location ---- Ring Dist (km)	Direction (deg)	Day,Period
24-Hour				
Highest	11.7	4.8	290	16
2nd-High	10.2	4.8	280	25
3-Hour				
Highest	38.5	4.8	290	25,7
2nd-High	33.6	4.8	300	79,1

Comments -- The sum of the maximum 3-hour concentrations from Widget and Ajax is 306.2 ug/m^3, which is much less than the 3-hour increment standard of 512 ug/m^3. Therefore, no additional analysis near Ajax is required for 3-hour averages. The sum of the Ajax' 2nd-high and the highest Widget 24-hour concentrations is 86.2 ug/m^3, which is less than the 24-hour increment standard of 91 ug/m^3. Therefore, no additional analysis is required.

3. Alternate Method (More Refined) -- 1979

The more obvious method for calculating the maximum combined impact from Widget and Ajax at Ajax is to model both Ajax and Widget in a single model run. The following run will demonstrate that the above method is, in fact, conservative.

Results of Combined Analysis at Ajax
(See Table 12.12 for details)

Averaging Period	Maximum Combined Concentration (ug/m^3)	------ Location ---- Ring Dist (km)	Direction (deg)	Day,Period
24-Hour				
Highest	82.8	1.0	300	76,1
2nd-High	78.3	1.0	300	77,1
3-Hour				
Highest	267.7	0.4	340	170,5
2nd-High	254.1	0.6	340	97,5

Comparison of Previous Analysis With Combined Analysis

Averaging Period	Combined 2nd-High Concentration (ug/m^3)	Sum of Individual Runs (ug/m^3)
24-Hour	78.3	86.2
3-Hour	254.1	306.2

Comments -- The above combined run calculated a total 3-hour concentration of 254.1 ug/m^3 compared to the previous value of 306.2 ug/m^3. The above 24-hour combined concentration of 78.3 ug/m^3 is less than the previously calculated value of 86.2 ug/m^3. Therefore, the previous method is conservative.

E. Discussion of Results

What would be our next step if a violation was modeled near Ajax? (Determine the periods when Widget's concentration exceeds the modeling level-of-significance. All other periods may be ignored. Why? How?)

XIII. Putting It All Together -- 1979

A. Maximum Concentrations from Widget Alone

Results From Widget Alone Analysis
(See Table 12.6 For Details)

Averaging Period	Concentration (ug/m^3)	------ Location ---- Ring Dist (km)	Direction (deg)	Day,Period
24-Hour				
Highest	95.3	0.2	180	8
2nd-High	80.2	0.2	180	351
3-Hour				
Highest	172.7	0.3	110	21,2
2nd-High	153.2	0.2	120	21,1

B. PSD SO_2 Increment Consumption -- The following table includes the "Sum of Individual Runs" values.

Summary
Increment Analysis

Averaging Period	Class II Increment Standard (ug/m^3)	Total Increment Consumption (ug/m^3)	Contribution From Widget (ug/m^3)
Annual	20	5.4	4.8
24-Hour	91	86.2	11.7
3-Hour	512	306.2	38.5

C. Total Ground-level Impacts (NAAQS)

Summary
NAAQS Analysis

Averaging Period	NAAQS (ug/m^3)	Total Combined Concentration (ug/m^3)	---- Contribution From -----		
			Widget (ug/m^3)	Other Sources (ug/m^3)	Monitoring Data (ug/m^3)
Annual	80	40.4	4.8	0.6	35
24-Hour	365	133.2	11.7	74.5	47
3-Hour	1300	353.2	38.5	267.7	47

D. Discuss Impacts at Class I Areas -- In general, the guideline models can be used if the Class I area is within 100 kilometers. If greater than 100 kilometers, try modeling at 100 kilometers in the direction of the Class I area. If the 100 kilometer results are too high, a long-range transport model will be required. None of the long-range transport models are Guideline models and, therefore, must be approved by the reviewing agency prior to use. Additionally, a visibility impact assessment may have to be performed.

E. Presentation of Results -- Most agencies will require the following information to be submitted as part of the modeling analysis:

Drawings and Maps. Project location, location of other sources, receptor locations, fenceline locations, location and size of structures

Tables and Computer Printouts. Tables of results (include reference to computer printout names), computer printouts

Stack Data. Justification of stack parameters and emission rates

Stack Height/Downwash. GEP stack height analysis, building downwash parameters

Meteorological Data. Discussion of the selection of representative meteorological data

Description of the Modeling Methodology. Justification of screening of sources, receptor placements, treatment of terrain

Summary of Results. Project alone, PSD increment consumption, NAAQS, Class I Impacts.

XIV. Summary

XV. Questions

Table 12.1 WIDGET SCREENING (SELECTED PORTIONS)

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
5	0	0	0	.16000E+02	.0	.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

DAILY: 1
1-HR/PD 1
SGROUP# 1

*** SCREENING RUN - SO2 ***

* DAILY 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* ENDING WITH HOUR 1 FOR DAY 1 *
* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	.00000	230.0	.0	1.46225	235.0	.0	1.54149
240.0	.0	1.62564	300.0	.0	3.38580	420.0	.0	16.87823
430.0	.0	19.26877	440.0	.0	21.86781	500.0	.0	41.14367
520.0	.0	50.47194	525.0	.0	52.86003	530.0	.0	55.25743
540.0	.0	60.05325	600.0	.0	86.31158	700.0	.0	108.45370
1000.0	.0	74.98831						

DAILY: 2

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	.76426	230.0	.0	2.97482	235.0	.0	3.26791
240.0	.0	3.58534	300.0	.0	10.84044	420.0	.0	54.78978
430.0	.0	60.37854	440.0	.0	65.93812	500.0	.0	95.37054
520.0	.0	122.23620	525.0	.0	123.39570	530.0	.0	124.42060
540.0	.0	126.07990	600.0	.0	126.88030	700.0	.0	108.77100
1000.0	.0	50.93666						

DAILY: 3

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	.92994	230.0	.0	4.90174	235.0	.0	5.46691
240.0	.0	6.08033	300.0	.0	19.67182	420.0	.0	80.53178
430.0	.0	86.46076	440.0	.0	92.03015	500.0	.0	115.92490
520.0	.0	132.64480	525.0	.0	132.70950	530.0	.0	132.65620
540.0	.0	132.22070	600.0	.0	122.90160	700.0	.0	97.33639
1000.0	.0	42.06219						

Table 12.1 WIDGET SCREENING (SELECTED PORTIONS) (cont.)

DAILY: 4

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	1.95793	230.0	.0	13.77748	235.0	.0	15.44305
240.0	.0	17.21653	300.0	.0	49.12081	420.0	.0	117.70410
430.0	.0	120.98940	440.0	.0	123.57950	500.0	.0	127.13230
520.0	.0	125.33840	525.0	.0	124.00590	530.0	.0	122.62900
540.0	.0	119.76440	600.0	.0	101.25110	700.0	.0	73.26225
1000.0	.0	28.99539						

DAILY: 5

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	3.90171	230.0	.0	26.85062	235.0	.0	29.69789
240.0	.0	32.64368	300.0	.0	75.38358	420.0	.0	125.68520
430.0	.0	126.25780	440.0	.0	126.24460	500.0	.0	117.69790
520.0	.0	108.48530	525.0	.0	106.81010	530.0	.0	105.13150
540.0	.0	101.77730	600.0	.0	82.66070	700.0	.0	57.63701
1000.0	.0	22.02809						

DAILY: 6

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	6.76410	230.0	.0	40.92451	235.0	.0	44.56002
240.0	.0	48.22209	300.0	.0	92.80493	420.0	.0	122.08630
430.0	.0	121.00070	440.0	.0	119.50180	500.0	.0	105.36970
520.0	.0	93.59592	525.0	.0	91.90791	530.0	.0	90.23540
540.0	.0	86.94391	600.0	.0	69.11651	700.0	.0	47.26218
1000.0	.0	17.73803						

DAILY: 7

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	11.26808	230.0	.0	55.37922	235.0	.0	59.38797
240.0	.0	63.32701	300.0	.0	104.44670	420.0	.0	115.61690
430.0	.0	113.53750	440.0	.0	111.19260	500.0	.0	94.44577
520.0	.0	81.87093	525.0	.0	80.25612	530.0	.0	78.66601
540.0	.0	75.56319	600.0	.0	59.24116	700.0	.0	40.00488
1000.0	.0	14.84184						

DAILY: 17

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	7.84272	230.0	.0	14.31066	235.0	.0	18.07074
240.0	.0	19.03911	300.0	.0	32.26429	420.0	.0	62.34859
430.0	.0	64.76839	440.0	.0	67.14744	500.0	.0	80.35590
520.0	.0	84.28652	525.0	.0	85.22890	530.0	.0	86.15489
540.0	.0	87.95734	600.0	.0	97.36347	700.0	.0	107.86800
1000.0	.0	112.02030						

Table 12.1 WIDGET SCREENING (SELECTED PORTIONS) (cont.)

DAILY: 18

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	14.68009	230.0	.0	25.65941	235.0	.0	31.80122
240.0	.0	33.28344	300.0	.0	52.01830	420.0	.0	86.80478
430.0	.0	89.20888	440.0	.0	91.51786	500.0	.0	103.32410
520.0	.0	106.48390	525.0	.0	107.21500	530.0	.0	107.92300
540.0	.0	109.27060	600.0	.0	115.54860	700.0	.0	120.21700
1000.0	.0	110.60690						

DAILY: 19

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	24.72536	230.0	.0	40.17371	235.0	.0	48.61487
240.0	.0	50.50655	300.0	.0	72.71526	420.0	.0	106.76750
430.0	.0	108.77180	440.0	.0	110.64730	500.0	.0	119.33970
520.0	.0	121.34010	525.0	.0	121.77660	530.0	.0	122.18860
540.0	.0	122.94110	600.0	.0	125.65450	700.0	.0	124.92280
1000.0	.0	105.68600						

DAILY: 20

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	45.99145	230.0	.0	67.67825	235.0	.0	78.77705
240.0	.0	80.91433	300.0	.0	103.18420	420.0	.0	127.30430
430.0	.0	128.23140	440.0	.0	129.02190	500.0	.0	131.27800
520.0	.0	131.23550	525.0	.0	131.17330	530.0	.0	131.09190
540.0	.0	130.87360	600.0	.0	128.26550	700.0	.0	120.69380
1000.0	.0	92.50356						

DAILY: 21

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	63.61093	230.0	.0	87.63609	235.0	.0	99.28255
240.0	.0	101.19510	300.0	.0	119.19840	420.0	.0	132.07900
430.0	.0	132.14180	440.0	.0	132.09240	500.0	.0	129.86530
520.0	.0	128.54840	525.0	.0	128.18470	530.0	.0	127.80840
540.0	.0	127.02050	600.0	.0	121.52360	700.0	.0	110.83980
1000.0	.0	80.41696						

DAILY: 22

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	84.02512	230.0	.0	106.43760	235.0	.0	116.68070
240.0	.0	117.84630	300.0	.0	126.52720	420.0	.0	124.23160
430.0	.0	123.36540	440.0	.0	122.43820	500.0	.0	115.94380
520.0	.0	113.54710	525.0	.0	112.93720	530.0	.0	112.32380
540.0	.0	111.08820	600.0	.0	103.56240	700.0	.0	91.37214
1000.0	.0	62.57792						

Table 12.1 WIDGET SCREENING (SELECTED PORTIONS) (cont.)

DAILY: 23

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	91.84505	230.0	.0	108.40360	235.0	.0	115.90640
240.0	.0	116.26920	300.0	.0	116.60600	420.0	.0	104.99040
430.0	.0	103.71030	440.0	.0	102.41250	500.0	.0	94.46650
520.0	.0	91.82705	525.0	.0	91.17178	530.0	.0	90.51878
540.0	.0	89.22031	600.0	.0	81.69781	700.0	.0	70.45395
1000.0	.0	46.39425						

DAILY: 24

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	90.56741	230.0	.0	103.78210	235.0	.0	109.90900
240.0	.0	109.96830	300.0	.0	107.48760	420.0	.0	93.70864
430.0	.0	92.38596	440.0	.0	91.05991	500.0	.0	83.18604
520.0	.0	80.64075	525.0	.0	80.01315	530.0	.0	79.38931
540.0	.0	78.15330	600.0	.0	71.09544	700.0	.0	60.80179
1000.0	.0	39.47122						

DAILY: 25

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	85.45184	230.0	.0	94.94899	235.0	.0	99.61336
240.0	.0	99.41534	300.0	.0	94.76617	420.0	.0	80.07383
430.0	.0	78.79514	440.0	.0	77.52441	500.0	.0	70.16287
520.0	.0	67.83686	525.0	.0	67.26665	530.0	.0	66.70111
540.0	.0	65.58408	600.0	.0	59.28542	700.0	.0	50.29717
1000.0	.0	32.20834						

DAILY: 40

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	34.39468	230.0	.0	58.97193	235.0	.0	69.05143
240.0	.0	66.05993	300.0	.0	53.52485	420.0	.0	54.81578
430.0	.0	54.92203	440.0	.0	55.02858	500.0	.0	55.67628
520.0	.0	55.89505	525.0	.0	55.94995	530.0	.0	56.00486
540.0	.0	56.11492	600.0	.0	56.77752	700.0	.0	57.87062
1000.0	.0	56.72550						

DAILY: 41

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	62.53974	230.0	.0	98.32583	235.0	.0	112.50100
240.0	.0	108.12050	300.0	.0	70.53090	420.0	.0	57.73799
430.0	.0	57.74987	440.0	.0	57.76374	500.0	.0	57.88696
520.0	.0	57.94135	525.0	.0	57.95582	530.0	.0	57.97065
540.0	.0	58.00126	600.0	.0	58.20726	700.0	.0	58.60061
1000.0	.0	56.03762						

Table 12.1 WIDGET SCREENING (SELECTED PORTIONS) (cont.)

DAILY: 42

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	90.83111	230.0	.0	133.91110	235.0	.0	150.44730
240.0	.0	145.11820	300.0	.0	98.39034	420.0	.0	58.96416
430.0	.0	58.89772	440.0	.0	58.83502	500.0	.0	58.52919
520.0	.0	58.45059	525.0	.0	58.43253	530.0	.0	58.41507
540.0	.0	58.38186	600.0	.0	58.22401	700.0	.0	58.06989
1000.0	.0	54.50101						

DAILY: 43

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	135.63770	230.0	.0	182.86950	235.0	.0	200.33810
240.0	.0	194.20230	300.0	.0	138.96140	420.0	.0	82.76357
430.0	.0	79.78551	440.0	.0	76.97701	500.0	.0	63.04363
520.0	.0	59.29253	525.0	.0	58.41163	530.0	.0	57.55194
540.0	.0	57.08855	600.0	.0	56.41893	700.0	.0	55.50911
1000.0	.0	50.71189						

DAILY: 44

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	162.28490	230.0	.0	206.28900	235.0	.0	222.42310
240.0	.0	216.26450	300.0	.0	160.01210	420.0	.0	100.57650
430.0	.0	97.33173	440.0	.0	94.26006	500.0	.0	78.83391
520.0	.0	74.62057	525.0	.0	73.62690	530.0	.0	72.65560
540.0	.0	70.77739	600.0	.0	61.06202	700.0	.0	52.40206
1000.0	.0	46.97659						

DAILY: 45

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	88.92373	230.0	.0	142.37450	235.0	.0	161.95820
240.0	.0	155.07770	300.0	.0	117.85220	420.0	.0	103.95910
430.0	.0	102.97090	440.0	.0	102.00690	500.0	.0	96.70004
520.0	.0	95.09925	525.0	.0	94.71122	530.0	.0	94.32780
540.0	.0	93.57502	600.0	.0	89.41936	700.0	.0	83.65893
1000.0	.0	72.08595						

DAILY: 46

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	138.64280	230.0	.0	205.13080	235.0	.0	228.37000
240.0	.0	219.78600	300.0	.0	144.05570	420.0	.0	104.37040
430.0	.0	103.27170	440.0	.0	102.20250	500.0	.0	96.35543
520.0	.0	94.60361	525.0	.0	94.17973	530.0	.0	93.76129
540.0	.0	92.94032	600.0	.0	88.42655	700.0	.0	82.21290
1000.0	.0	69.82106						

Table 12.1 WIDGET SCREENING (SELECTED PORTIONS) (cont.)

DAILY: 47

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	180.09900	230.0	.0	250.98830	235.0	.0	275.12330
240.0	.0	265.72210	300.0	.0	181.25550	420.0	.0	102.78860
430.0	.0	101.62680	440.0	.0	100.49780	500.0	.0	94.35506
520.0	.0	92.52399	525.0	.0	92.08153	530.0	.0	91.64489
540.0	.0	90.78905	600.0	.0	86.09719	700.0	.0	79.67175
1000.0	.0	66.93432						

DAILY: 48

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	232.68540	230.0	.0	298.34110	235.0	.0	320.50510
240.0	.0	310.92310	300.0	.0	223.10570	420.0	.0	130.32350
430.0	.0	125.29710	440.0	.0	120.54680	500.0	.0	96.84784
520.0	.0	90.43491	525.0	.0	88.92727	530.0	.0	87.45547
540.0	.0	85.05360	600.0	.0	80.28127	700.0	.0	73.79379
1000.0	.0	61.04830						

DAILY: 49

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
100.0	.0	255.04700	230.0	.0	309.79960	235.0	.0	328.76460
240.0	.0	319.75620	300.0	.0	236.38070	420.0	.0	145.73210
430.0	.0	140.69810	440.0	.0	135.92430	500.0	.0	111.83820
520.0	.0	105.23000	525.0	.0	103.67000	530.0	.0	102.14450
540.0	.0	99.19338	600.0	.0	83.90652	700.0	.0	68.16968
1000.0	.0	55.79733						

Table 12.2 RADIUS-OF-IMPACT -- COARSE GRID (SELECTED PORTIONS)

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1001	0	0	0	.16000E+02	.0	.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

```
* CALM HOURS (=1) FOR DAY   2 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0
* CALM HOURS (=1) FOR DAY   3 * 0 0 1 1 1 1 1 1 0 0 0 0 1 1 1 1 0 0 1 1 1 1 1 0
* CALM HOURS (=1) FOR DAY   4 * 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
.                                                                              .
.                                                                              .
.                                                                              .
* CALM HOURS (=1) FOR DAY 359 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0
* CALM HOURS (=1) FOR DAY 360 * 1 1 0 1 0 1 1 1 1 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1
* CALM HOURS (=1) FOR DAY 361 * 1 0 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
* CALM HOURS (=1) FOR DAY 362 * 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
* CALM HOURS (=1) FOR DAY 363 * 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
* CALM HOURS (=1) FOR DAY 364 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
```

Table 12.2 RADIUS-OF-IMPACT -- COARSE GRID (SELECTED PORTIONS) (cont.)

'N'-DAY
365 DAYS
SGROUP# 1

*** LESSON 12 COARSE-GRID R-OF-I ***

* 365-DAY AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 1.17754 AND OCCURRED AT (5000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 5000.0	10000.0	20000.0	30000.0	40000.0
360.0 /	.62791	.28457	.12341	.07542	.05333
350.0 /	.60666	.27756	.12177	.07484	.05306
340.0 /	.53874	.23901	.10302	.06301	.04465
330.0 /	.55114	.23435	.09571	.05655	.03915
320.0 /	.74612	.33346	.14187	.08555	.05994
310.0 /	1.01084	.46176	.19906	.12083	.08504
300.0 /	1.17754	.55686	.24767	.15324	.10928
290.0 /	.78464	.36361	.15978	.09841	.07007
280.0 /	.66439	.31852	.14615	.09217	.06653
270.0 /	.70940	.33542	.15162	.09490	.06827
260.0 /	.55485	.25633	.11343	.07021	.05016
250.0 /	.67137	.32363	.14981	.09504	.06890
240.0 /	.77330	.38445	.17980	.11412	.08259
230.0 /	.84067	.43906	.21494	.13969	.10247
220.0 /	.77035	.38756	.18296	.11649	.08437
210.0 /	.69397	.35345	.16901	.10810	.07843
200.0 /	.60510	.29100	.13220	.08233	.05877
190.0 /	.70055	.33511	.15292	.09611	.06921
180.0 /	.87847	.41129	.18399	.11432	.08168
170.0 /	.59953	.27297	.11958	.07360	.05235
160.0 /	.44354	.19520	.08293	.05012	.03520
150.0 /	.45186	.21324	.09691	.06069	.04354
140.0 /	.40472	.17725	.07542	.04573	.03220
130.0 /	.34533	.14625	.06072	.03649	.02561
120.0 /	.28502	.11970	.05060	.03102	.02217
110.0 /	.26988	.11650	.04933	.02995	.02117
100.0 /	.24957	.10845	.04645	.02837	.02010
90.0 /	.35363	.16617	.07707	.04922	.03587
80.0 /	.27722	.13570	.06396	.04081	.02960
70.0 /	.24647	.11547	.05190	.03216	.02290
60.0 /	.31060	.14610	.06600	.04118	.02946
50.0 /	.34388	.15654	.06804	.04154	.02934
40.0 /	.32001	.13988	.05903	.03557	.02495
30.0 /	.27716	.12079	.05139	.03128	.02212
20.0 /	.25728	.10667	.04414	.02661	.01871
10.0 /	.32309	.13537	.05579	.03339	.02333

Table 12.2 RADIUS-OF-IMPACT -- COARSE GRID (SELECTED PORTIONS) (cont.)

HIGH
3-HR
SGROUP# 1

*** LESSON 12 COARSE-GRID R-OF-I ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 37.27153 AND OCCURRED AT (5000.0, 290.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 5000.0	10000.0	20000.0	30000.0	40000.0
360.0 /	25.02826 (157, 8)	12.77392 (169, 8)	7.19306 (301, 8)	5.26629 (301, 8)	4.14605 (301, 8)
350.0 /	27.19949C(124, 7)	15.40160C(124, 7)	9.48654C(217, 8)	7.11730C(217, 8)	5.68226C(217, 8)
340.0 /	19.54197 (281, 3)	13.21523 (281, 3)	7.19041 (96, 7)	5.26383 (96, 7)	4.14408 (96, 7)
330.0 /	21.15994 (354, 6)	9.70292 (108, 7)	5.05864 (108, 7)	3.53205 (86, 7)	2.73892 (86, 7)
320.0 /	23.76820 (357, 2)	11.32878C(149, 1)	7.19467C(149, 1)	5.26752C(149, 1)	4.14696C(149, 1)
310.0 /	28.34989 (13, 3)	15.56471 (293, 1)	9.26128 (293, 1)	6.57750 (293, 1)	5.08951 (293, 1)
300.0 /	36.52653 (300, 7)	24.78185 (300, 7)	14.19471 (300, 7)	9.81234 (300, 7)	7.42988 (300, 7)
290.0 /	37.27153 (25, 7)	20.68660 (25, 7)	11.08521 (25, 7)	7.70093 (25, 7)	5.95162 (25, 7)
280.0 /	29.60748 (25, 8)	17.23581 (18, 6)	9.09371 (18, 6)	6.35972 (25, 8)	4.94646 (25, 8)
270.0 /	28.74779 (59, 1)	16.20910 (59, 1)	7.98971 (88, 2)	5.48459 (88, 2)	4.15074 (240, 7)
260.0 /	20.95306 (287, 8)	14.45327 (287, 8)	8.47733 (287, 8)	5.93016 (287, 8)	4.52245 (287, 8)
250.0 /	30.22080 (362, 6)	17.12063 (362, 6)	9.46498 (301, 2)	7.10055 (301, 2)	5.66926 (301, 2)
240.0 /	33.39513 (260, 1)	18.05536C(361, 8)	10.24000C(361, 8)	7.08236C(361, 8)	5.38716C(361, 8)
230.0 /	33.91537 (290, 1)	24.68116 (290, 1)	14.58843 (290, 1)	10.17307 (290, 1)	7.73551 (290, 1)
220.0 /	26.18865 (117, 1)	14.58312 (342, 8)	8.37831 (342, 8)	5.80304 (342, 8)	4.40134 (342, 8)
210.0 /	24.68735 (92, 8)	16.90045 (311, 2)	10.21338 (311, 2)	7.24560 (311, 2)	5.67163 (150, 8)
200.0 /	22.94985 (117, 6)	14.47440 (162, 8)	8.24314 (162, 8)	5.74518 (162, 8)	4.39558 (162, 8)
190.0 /	24.32383 (198, 8)	14.52271 (198, 8)	7.27066 (198, 8)	5.27143 (252, 8)	4.14962 (252, 8)
180.0 /	30.46453 (364, 3)	16.79670 (306, 8)	10.14327 (306, 8)	7.25452 (306, 8)	5.63591 (306, 8)
170.0 /	30.30823 (38, 7)	14.91533 (38, 7)	7.20126 (161, 2)	5.27143 (161, 2)	4.14962 (161, 2)
160.0 /	24.70716 (277, 6)	12.96803 (197, 2)	7.52435C(311, 7)	5.47716C(311, 7)	4.27516C(311, 7)
150.0 /	22.24669 (175, 7)	11.91893C(277, 7)	7.19094C(134, 7)	5.26530C(134, 7)	4.14544C(134, 7)
140.0 /	17.68180 (21, 7)	11.26260C(64, 2)	7.16447C(64, 2)	5.24958C(64, 2)	4.13472C(64, 2)
130.0 /	25.32040 (23, 5)	13.96537 (23, 5)	7.49385 (23, 5)	5.27224 (197, 1)	4.15018 (197, 1)
120.0 /	27.71081 (21, 1)	14.84871 (21, 1)	7.98393 (21, 1)	5.56608 (21, 1)	4.31378 (21, 1)
110.0 /	31.87993 (21, 2)	16.79925 (21, 2)	8.86293 (21, 2)	6.10065 (21, 2)	4.68163 (21, 2)
100.0 /	20.89168 (359, 2)	14.42371 (359, 2)	8.46502 (359, 2)	5.92320 (359, 2)	4.51786 (359, 2)
90.0 /	25.93428C(60, 1)	14.59739C(60, 1)	8.58224 (155, 7)	6.08086 (155, 7)	4.69379 (155, 7)
80.0 /	23.20270 (187, 1)	14.71010 (187, 1)	7.98551 (187, 1)	5.38142 (187, 1)	4.01388 (187, 1)
70.0 /	16.59274C(182, 2)	10.64447C(182, 2)	5.63532C(182, 2)	3.71431C(182, 2)	2.74121 (277, 1)
60.0 /	25.19147 (183, 1)	16.36222 (183, 1)	9.01281 (183, 1)	6.11032 (183, 1)	4.57612 (183, 1)
50.0 /	23.85580 (192, 7)	16.32748 (192, 7)	9.55587 (192, 7)	6.73038 (192, 7)	5.17532 (192, 7)
40.0 /	24.21031 (45, 1)	10.66024 (187, 7)	5.64014 (187, 7)	3.71669 (187, 7)	2.73354 (187, 7)
30.0 /	20.74800 (92, 3)	11.67175 (209, 8)	7.20977 (211, 7)	5.27647 (211, 7)	4.15307 (211, 7)
20.0 /	17.05003 (85, 6)	11.83858 (153, 8)	7.53132 (153, 8)	5.48475 (153, 8)	4.28190 (153, 8)
10.0 /	24.29280 (156, 7)	14.39657 (156, 7)	7.98550 (174, 8)	5.56684 (174, 8)	4.23716 (174, 8)

Table 12.2 RADIUS-OF-IMPACT -- COURSE GRID (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 COARSE-GRID R-OF-I ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 11.88860 AND OCCURRED AT (5000.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 5000.0	10000.0	20000.0	30000.0	40000.0
360.0 /	7.47801C(313, 1)	3.42412C(313, 1)	1.73412C(301, 1)	1.14903C(301, 1)	.85387C(301, 1)
350.0 /	5.54949 (91, 1)	2.54711 (91, 1)	1.58109C(217, 1)	1.18622C(217, 1)	.94705C(217, 1)
340.0 /	4.98276C(295, 1)	3.20250C(281, 1)	1.83084C(281, 1)	1.25319C(281, 1)	.94198C(281, 1)
330.0 /	6.03933 (123, 1)	2.45874C(17, 1)	1.18668C(17, 1)	.78817C(17, 1)	.59128C(17, 1)
320.0 /	6.95780 (294, 1)	2.90259 (294, 1)	1.27411 (169, 1)	.89401 (169, 1)	.68550 (169, 1)
310.0 /	9.63577C(52, 1)	4.25065C(52, 1)	1.94682 (293, 1)	1.25095 (293, 1)	.92024C(142, 1)
300.0 /	9.63493 (345, 1)	4.46325C(300, 1)	2.50976C(300, 1)	1.71770C(300, 1)	1.29181C(300, 1)
290.0 /	11.16251 (16, 1)	4.74180 (16, 1)	2.08855C(15, 1)	1.45063C(15, 1)	1.10643C(15, 1)
280.0 /	10.55204 (26, 1)	5.60383C(25, 1)	3.01479C(25, 1)	2.10150C(25, 1)	1.62918C(25, 1)
270.0 /	9.82207C(18, 1)	5.48080C(18, 1)	2.87145C(18, 1)	1.94945C(18, 1)	1.47870C(18, 1)
260.0 /	5.62161 (36, 1)	2.93315C(191, 1)	1.49060C(191, 1)	.99064C(191, 1)	.74021C(191, 1)
250.0 /	9.28897C(362, 1)	4.64820C(362, 1)	2.28806C(362, 1)	1.50851C(362, 1)	1.12029C(362, 1)
240.0 /	8.62679C(337, 1)	4.84490C(337, 1)	2.60972C(337, 1)	1.78909C(337, 1)	1.36049C(337, 1)
230.0 /	7.37024C(290, 1)	4.51049C(290, 1)	2.46475C(290, 1)	1.75498C(167, 1)	1.38173C(167, 1)
220.0 /	7.94649C(136, 1)	4.43388C(136, 1)	2.30048C(136, 1)	1.53225C(136, 1)	1.13900C(136, 1)
210.0 /	7.48572 (269, 1)	4.30852C(311, 1)	2.44139C(311, 1)	1.67799C(311, 1)	1.26567C(311, 1)
200.0 /	8.39448 (162, 1)	4.16701 (162, 1)	1.97397 (162, 1)	1.26941 (162, 1)	.92791 (162, 1)
190.0 /	8.36968C(198, 1)	4.43673C(198, 1)	2.07079C(198, 1)	1.28266C(198, 1)	.90478C(198, 1)
180.0 /	11.88860 (315, 1)	6.05268 (315, 1)	2.88088 (315, 1)	1.84335 (315, 1)	1.34360 (315, 1)
170.0 /	7.78262 (305, 1)	4.17489 (305, 1)	2.12757 (305, 1)	1.41935 (305, 1)	1.06248 (305, 1)
160.0 /	6.51679C(277, 1)	3.28819C(277, 1)	1.66140C(277, 1)	1.11862C(277, 1)	.84686C(277, 1)
150.0 /	5.58650 (14, 1)	2.92328C(277, 1)	1.55553C(277, 1)	1.03115C(277, 1)	.75788C(277, 1)
140.0 /	4.90072 (27, 1)	2.32172C(64, 1)	1.41331C(64, 1)	1.00777C(64, 1)	.77787C(64, 1)
130.0 /	6.24918 (27, 1)	2.42812 (27, 1)	.95375 (23, 1)	.66327 (197, 1)	.52113 (197, 1)
120.0 /	7.29021C(327, 1)	2.99624C(327, 1)	1.25923C(84, 1)	.84775C(84, 1)	.64568C(84, 1)
110.0 /	5.98588C(21, 1)	3.10425C(21, 1)	1.61169C(21, 1)	1.09859C(21, 1)	.83693C(21, 1)
100.0 /	6.83159C(359, 1)	4.18922C(359, 1)	2.28719C(359, 1)	1.55296C(359, 1)	1.16478C(359, 1)
90.0 /	5.89442C(223, 1)	2.82995C(223, 1)	1.52325C(359, 1)	1.08118C(359, 1)	.83684C(359, 1)
80.0 /	6.26970C(66, 1)	2.99087C(66, 1)	1.52416C(213, 1)	1.04454C(213, 1)	.78921C(213, 1)
70.0 /	5.24191C(329, 1)	2.28498C(329, 1)	.95744C(181, 1)	.60618C(66, 1)	.44592C(66, 1)
60.0 /	5.13761C(183, 1)	3.05086C(183, 1)	1.59663C(183, 1)	1.12236C(280, 1)	.86079C(280, 1)
50.0 /	4.63233C(279, 1)	2.50196C(185, 1)	1.27069C(185, 1)	.87832C(192, 1)	.67524C(192, 1)
40.0 /	6.29188 (45, 1)	2.60841C(187, 1)	1.22437C(187, 1)	.77004C(187, 1)	.55242C(187, 1)
30.0 /	4.31498 (46, 1)	2.41210C(180, 1)	1.20133C(180, 1)	.77249C(180, 1)	.56646C(180, 1)
20.0 /	5.91139C(72, 1)	2.30646C(72, 1)	1.00541C(153, 1)	.72591C(153, 1)	.56444C(153, 1)
10.0 /	6.99615C(156, 1)	4.14710C(156, 1)	2.13468C(156, 1)	1.40602C(156, 1)	1.03530C(156, 1)

Table 12.3 RADIUS-OF-IMPACT FINE GRID (SELECTED PORTIONS)

ISCST (DATED 88207)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 1. GUIDELINE MODELS
IN UNAMAP (VERSION 6) JUNE 88.
SOURCE: UNAMAP FILE ON EPA'S UNIVAC AT RTP, NC.

NOTE THAT THE BUILDING DIMENSIONS ON CARD 6,1 FOR SOURCE NO. 1001 DO NOT MEET THE SCHULMAN-SCIRE CRITERIA.
THEREFORE, DIRECTION SPECIFIC BUILDING DIMENSIONS WILL NOT BE USED BY THE MODEL.

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

*** RANGES OF POLAR GRID SYSTEM ***
(METERS)

6000.0, 7000.0, 8000.0, 12000.0, 14000.0,

*** RADIAL ANGLES OF POLAR GRID SYSTEM ***

(DEGREES)

```
 10.0,   20.0,   30.0,   40.0,   50.0,   60.0,   70.0,   80.0,   90.0,  100.0,
110.0,  120.0,  130.0,  140.0,  150.0,  160.0,  170.0,  180.0,  190.0,  200.0,
210.0,  220.0,  230.0,  240.0,  250.0,  260.0,  270.0,  280.0,  290.0,  300.0,
310.0,  320.0,  330.0,  340.0,  350.0,  360.0,
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*** LESSON 12 FINE-GRID R-OF-I ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1001	0	0	0	.16000E+02	.0	.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

Table 12.3 RADIUS-OF-IMPACT FINE GRID (SELECTED PORTIONS) (cont.)

'N'-DAY
365 DAYS
SGROUP# 1

*** LESSON 12 FINE-GRID R-OF-I ***

* 365-DAY AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .97453 AND OCCURRED AT (6000.0, 300.0) *

DIRECTION /	RANGE (METERS)				
(DEGREES) /	6000.0	7000.0	8000.0	12000.0	14000.0
360.0 /	.51245	.43010	.36867	.22941	.19004
350.0 /	.49610	.41721	.35833	.22449	.18633
340.0 /	.43648	.36443	.31121	.19216	.15892
330.0 /	.44255	.36617	.30995	.18579	.15210
320.0 /	.60729	.50820	.43432	.26757	.22077
310.0 /	.82858	.69701	.59810	.37201	.30782
300.0 /	.97453	.82621	.71365	.45248	.37673
290.0 /	.64569	.54489	.46885	.29418	.24449
280.0 /	.55039	.46780	.40543	.26071	.21855
270.0 /	.58587	.49646	.42904	.27338	.22855
260.0 /	.45522	.38376	.33023	.20768	.17286
250.0 /	.55622	.47325	.41074	.26556	.22295
240.0 /	.64719	.55484	.48430	.31695	.26653
230.0 /	.71221	.61729	.54412	.36682	.31108
220.0 /	.64653	.55566	.48614	.32059	.26993
210.0 /	.58396	.50320	.44137	.29354	.24775
200.0 /	.50168	.42676	.37010	.23810	.19897
190.0 /	.58018	.49295	.42699	.27396	.22932
180.0 /	.72321	.61142	.52739	.33446	.27871
170.0 /	.48973	.41137	.35294	.22061	.18305
160.0 /	.35901	.29925	.25506	.15641	.12904
150.0 /	.37186	.31477	.27207	.17426	.14550
140.0 /	.32702	.27227	.23185	.14196	.11712
130.0 /	.27644	.22838	.19322	.11622	.09543
120.0 /	.22709	.18715	.15818	.09535	.07861
110.0 /	.21702	.18010	.15302	.09309	.07679
100.0 /	.20076	.16677	.14190	.08698	.07179
90.0 /	.29003	.24513	.21183	.13619	.11433
80.0 /	.23027	.19655	.17117	.11197	.09434
70.0 /	.20257	.17127	.14786	.09408	.07857
60.0 /	.25569	.21641	.18694	.11907	.09954
50.0 /	.28100	.23609	.20255	.12632	.10470
40.0 /	.25868	.21535	.18330	.11180	.09222
30.0 /	.22337	.18574	.15808	.09671	.07977
20.0 /	.20422	.16781	.14148	.08464	.06935
10.0 /	.25749	.21218	.17924	.10744	.08798

Table 12.3 RADIUS-OF-IMPACT FINE GRID (SELECTED PORTIONS) (cont.)

HIGH
3-HR
SGROUP# 1

*** LESSON 12 FINE-GRID R-OF-I ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 33.49711 AND OCCURRED AT (6000.0, 300.0) *

DIRECTION /	RANGE (METERS)				
(DEGREES) /	6000.0	7000.0	8000.0	12000.0	14000.0
360.0 /	20.80358 (157, 8)	17.65630 (157, 8)	15.23660 (157, 8)	11.03268 (169, 8)	9.60286 (169, 8)
350.0 /	23.99607C(124, 7)	21.27018C(124, 7)	18.97208C(124, 7)	13.11204C(217, 8)	11.73655C(217, 8)
340.0 /	18.13773 (281, 3)	16.76655 (281, 3)	15.48887 (281, 3)	11.44961 (281, 3)	10.03368 (281, 3)
330.0 /	17.23121 (354, 6)	14.35024 (354, 6)	12.17362 (354, 6)	8.29995 (108, 7)	7.20234 (108, 7)
320.0 /	18.99164 (357, 2)	15.60090 (357, 2)	13.74934 (89, 7)	10.28270C(149, 1)	9.14802C(149, 1)
310.0 /	23.15854 (13, 3)	19.31166 (13, 3)	17.79843 (293, 1)	13.80084 (293, 1)	12.18331 (293, 1)
300.0 /	33.49711 (300, 7)	30.87207 (300, 7)	28.58060 (300, 7)	21.80150 (300, 7)	19.08140 (300, 7)
290.0 /	32.20634 (25, 7)	28.29855 (25, 7)	25.21247 (25, 7)	17.56448 (25, 7)	15.28687 (25, 7)
280.0 /	25.85778 (18, 6)	23.07774 (18, 6)	20.78593 (18, 6)	14.68694 (18, 6)	12.76033 (18, 6)
270.0 /	25.26634 (59, 1)	22.36497 (59, 1)	19.94693 (59, 1)	13.52934 (59, 1)	11.52244 (59, 1)
260.0 /	19.23519 (287, 8)	17.78322 (287, 8)	16.52813 (287, 8)	12.80196 (287, 8)	11.24372 (287, 8)
250.0 /	26.27789 (362, 6)	23.22292 (362, 6)	20.78279 (362, 6)	14.53603 (362, 6)	12.60894 (362, 6)
240.0 /	27.58066 (260, 1)	23.19349 (260, 1)	20.97684C(361, 8)	15.79607C(361, 8)	13.84087C(361, 8)
230.0 /	31.86351 (290, 1)	29.88144 (290, 1)	28.02380 (290, 1)	21.96329 (290, 1)	19.37575 (290, 1)
220.0 /	21.73787 (117, 1)	18.44067 (117, 1)	16.78867 (342, 8)	12.84765 (342, 8)	11.22383 (342, 8)
210.0 /	21.77288 (311, 2)	20.33448 (311, 2)	19.06243 (311, 2)	15.13035 (311, 2)	13.33588 (311, 2)
200.0 /	20.06381 (162, 8)	18.31445 (162, 8)	16.83398 (162, 8)	12.66645 (162, 8)	11.08152 (162, 8)
190.0 /	21.73180 (198, 8)	19.49829 (198, 8)	17.58475 (198, 8)	12.26582 (198, 8)	10.54154 (198, 8)
180.0 /	25.25579 (364, 3)	21.29491 (364, 3)	19.07630 (306, 8)	14.97050 (306, 8)	13.23904 (306, 8)
170.0 /	25.72853 (38, 7)	22.08291 (38, 7)	19.16269 (38, 7)	11.99951 (38, 7)	9.91066 (38, 7)
160.0 /	20.84620 (277, 6)	18.04617 (277, 6)	15.92397 (277, 6)	11.02452 (197, 2)	9.61556 (197, 2)
150.0 /	17.78514 (175, 7)	15.15362 (365, 7)	13.70502C(277, 7)	10.50205C(277, 7)	9.16331C(277, 7)
140.0 /	14.87038 (21, 7)	13.18391C(64, 2)	12.48665C(64, 2)	10.22857C(64, 2)	9.10163C(64, 2)
130.0 /	21.87401 (23, 5)	19.17549 (23, 5)	17.04930 (23, 5)	11.85264 (23, 5)	10.31894 (23, 5)
120.0 /	23.52510 (21, 1)	20.47391 (21, 1)	18.15379 (21, 1)	12.61065 (21, 1)	10.98377 (21, 1)
110.0 /	26.93387 (21, 2)	23.35622 (21, 2)	20.64443 (21, 2)	14.19645 (21, 2)	12.31415 (21, 2)
100.0 /	19.18349 (359, 2)	17.73899 (359, 2)	16.48983 (359, 2)	12.77849 (359, 2)	11.22391 (359, 2)
90.0 /	22.85673C(60, 1)	20.23634C(60, 1)	18.02723C(60, 1)	12.87488 (155, 7)	11.31043 (155, 7)
80.0 /	20.90671 (187, 1)	18.97649 (187, 1)	17.33576 (187, 1)	12.72152 (187, 1)	11.03575 (187, 1)
70.0 /	15.14355C(182, 2)	13.81797C(182, 2)	12.63587C(182, 2)	9.13885C(182, 2)	7.95647C(182, 2)
60.0 /	22.88616 (183, 1)	20.89683 (183, 1)	19.17470 (183, 1)	14.20743 (183, 1)	12.38174 (183, 1)
50.0 /	21.89142 (192, 7)	20.20323 (192, 7)	18.73877 (192, 7)	14.43951 (192, 7)	12.67425 (192, 7)
40.0 /	19.53340 (45, 1)	16.14344 (45, 1)	13.60407 (45, 1)	9.15055 (187, 7)	7.96544 (187, 7)
30.0 /	17.14059 (92, 3)	14.96050 (209, 8)	13.68476 (209, 8)	10.30984 (211, 7)	9.17126 (211, 7)
20.0 /	14.47540 (153, 8)	13.73240 (153, 8)	13.05069 (153, 8)	10.79396 (153, 8)	9.55992 (153, 8)
10.0 /	21.64256 (156, 7)	19.37952 (156, 7)	17.45329 (156, 7)	12.15228 (156, 7)	10.63268 (174, 8)

Table 12.3 RADIUS-OF-IMPACT FINE GRID (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 FINE-GRID R-OF-I ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 10.03077 AND OCCURRED AT (6000.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 6000.0	7000.0	8000.0	12000.0	14000.0
360.0 /	6.14187C(313, 1)	5.17005C(313, 1)	4.43647C(313, 1)	2.87433C(301, 1)	2.45648C(301, 1)
350.0 /	4.56909 (91, 1)	3.85145 (91, 1)	3.30619 (91, 1)	2.18534C(217, 1)	1.95609C(217, 1)
340.0 /	4.25776C(281, 1)	3.95968C(281, 1)	3.68556C(281, 1)	2.81880C(281, 1)	2.47799C(281, 1)
330.0 /	4.81278 (123, 1)	3.94397 (123, 1)	3.30381 (123, 1)	2.02480C(17, 1)	1.71947C(17, 1)
320.0 /	5.57978 (294, 1)	4.60046 (294, 1)	3.87554 (294, 1)	2.27667 (294, 1)	1.84746 (294, 1)
310.0 /	7.88455C(52, 1)	6.59198C(52, 1)	5.60893C(52, 1)	3.37900 (293, 1)	2.85202 (293, 1)
300.0 /	7.74978 (345, 1)	6.39803 (345, 1)	5.39150 (345, 1)	3.90719C(300, 1)	3.40441C(300, 1)
290.0 /	9.02083 (16, 1)	7.46767 (16, 1)	6.30619 (16, 1)	3.74003 (16, 1)	3.06036 (16, 1)
280.0 /	8.91022 (26, 1)	7.69152 (26, 1)	6.81451C(25, 1)	4.76289C(25, 1)	4.14848C(25, 1)
270.0 /	8.52428C(18, 1)	7.50218C(18, 1)	6.68747C(18, 1)	4.64014C(18, 1)	4.02103C(18, 1)
260.0 /	4.62716C(191, 1)	4.05533C(191, 1)	3.60349C(191, 1)	2.46798C(191, 1)	2.12490C(191, 1)
250.0 /	7.77173C(362, 1)	6.66625C(362, 1)	5.82800C(362, 1)	3.86039C(362, 1)	3.29735C(362, 1)
240.0 /	7.39729C(337, 1)	6.50846C(337, 1)	5.82907C(337, 1)	4.15229C(337, 1)	3.59642C(337, 1)
230.0 /	6.53474C(290, 1)	5.87859C(290, 1)	5.34392C(290, 1)	3.90114C(290, 1)	3.38186C(290, 1)
220.0 /	6.83552C(136, 1)	6.01063C(136, 1)	5.36933C(136, 1)	3.77606C(136, 1)	3.23048C(136, 1)
210.0 /	6.37356 (269, 1)	5.52054 (269, 1)	4.98914C(311, 1)	3.77882C(311, 1)	3.29928C(311, 1)
200.0 /	7.01036 (162, 1)	6.00340 (162, 1)	5.23826 (162, 1)	3.44250 (162, 1)	2.90214 (162, 1)
190.0 /	7.19474C(198, 1)	6.27473C(198, 1)	5.53698C(198, 1)	3.66872C(198, 1)	3.10327C(198, 1)
180.0 /	10.03077 (315, 1)	8.64400 (315, 1)	7.57359 (315, 1)	5.01380 (315, 1)	4.23490 (315, 1)
170.0 /	6.63579 (305, 1)	5.78318 (305, 1)	5.12377 (305, 1)	3.51783 (305, 1)	3.01577 (305, 1)
160.0 /	5.44796C(277, 1)	4.67831C(277, 1)	4.09901C(277, 1)	2.74614C(277, 1)	2.35884C(277, 1)
150.0 /	4.40666 (14, 1)	3.88100C(272, 1)	3.48144C(272, 1)	2.51690C(277, 1)	2.17230C(277, 1)
140.0 /	4.00721 (27, 1)	3.38176 (197, 1)	2.92659 (197, 1)	2.08454C(64, 1)	1.83709C(64, 1)
130.0 /	4.90728 (27, 1)	3.97734 (27, 1)	3.30444 (27, 1)	1.88111 (27, 1)	1.51366 (27, 1)
120.0 /	5.83391C(327, 1)	4.79456C(327, 1)	4.02472C(327, 1)	2.33684C(327, 1)	1.88689C(327, 1)
110.0 /	5.03591C(21, 1)	4.35147C(21, 1)	3.83445C(21, 1)	2.61242C(21, 1)	2.25802C(21, 1)
100.0 /	6.05604C(359, 1)	5.44616C(359, 1)	4.95000C(359, 1)	3.62451C(359, 1)	3.13947C(359, 1)
90.0 /	4.86371C(223, 1)	4.13441C(223, 1)	3.58949C(223, 1)	2.32006C(223, 1)	2.00978C(359, 1)
80.0 /	5.18561C(66, 1)	4.40161C(66, 1)	3.81038C(66, 1)	2.44397C(66, 1)	2.07728C(213, 1)
70.0 /	4.26832C(329, 1)	3.55626C(329, 1)	3.01908C(329, 1)	1.80795C(329, 1)	1.47389C(329, 1)
60.0 /	4.53165C(183, 1)	4.05194C(183, 1)	3.65858C(183, 1)	2.60562C(183, 1)	2.24671C(183, 1)
50.0 /	3.94896C(185, 1)	3.44952C(185, 1)	3.06332C(185, 1)	2.11066C(185, 1)	1.80641C(185, 1)
40.0 /	4.99019 (45, 1)	4.06948 (45, 1)	3.39246 (45, 1)	2.15171C(187, 1)	1.82106C(187, 1)
30.0 /	3.53586C(180, 1)	3.20021C(180, 1)	2.90206C(180, 1)	2.04002C(180, 1)	1.74692C(180, 1)
20.0 /	4.65781C(72, 1)	3.78213C(72, 1)	3.14404C(72, 1)	1.77887C(72, 1)	1.42349C(72, 1)
10.0 /	6.19843C(156, 1)	5.54293C(156, 1)	4.99722C(156, 1)	3.52552C(156, 1)	3.03154C(156, 1)

Table 12.4 ACTUAL AREA OF IMPACT -- WIDGET (SELECTED PORTIONS)

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                  ISCLT (DATED 88167)
                  AN AIR QUALITY DISPERSION MODEL IN
                  SECTION 1. GUIDELINE MODELS
                  IN UNAMAP (VERSION 6) JAN. 88.

 *** ISCLT ************** LESSON 12 COARSE-GRID -- 1979                                  ********* PAGE      1 ****

                                    - ISCLT INPUT DATA -

    DISTANCE X AXIS GRID SYSTEM POINTS (METERS )=  65500.00,  66000.00,  66500.00,  67000.00,  67500.00,  68000.00,
        68500.00,  69000.00,  69500.00,  70000.00,  70500.00,  71000.00,  71500.00,  72000.00,  72500.00,  73000.00,
        73500.00,  74000.00,  74500.00,  75000.00,  75500.00,
    DISTANCE Y AXIS GRID SYSTEM POINTS (METERS )=  80000.00,  80500.00,  81000.00,  81500.00,  82000.00,  82500.00,
        83000.00,  83500.00,  84000.00,  84500.00,  85000.00,  85500.00,  86000.00,  86500.00,  87000.00,  87500.00,
        88000.00,

                          - AMBIENT AIR TEMPERATURE (DEGREES KELVIN) -

                STABILITY  STABILITY  STABILITY  STABILITY  STABILITY  STABILITY
                CATEGORY 1 CATEGORY 2 CATEGORY 3 CATEGORY 4 CATEGORY 5 CATEGORY 6
     SEASON  1   302.4000   298.7000   296.5000   290.5000   290.4000   288.0000

                                  - MIXING LAYER HEIGHT (METERS) -

                                            SEASON 1
                     WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED  WIND SPEED
                     CATEGORY 1  CATEGORY 2  CATEGORY 3  CATEGORY 4  CATEGORY 5  CATEGORY 6
STABILITY CATEGORY 10.110990E+040.120630E+040.120630E+040.120630E+040.120630E+040.120630E+04
STABILITY CATEGORY 20.101130E+040.101190E+040.113990E+040.113990E+040.113990E+040.113990E+04
STABILITY CATEGORY 30.944000E+030.883200E+030.961700E+030.109340E+040.127690E+040.926000E+03
STABILITY CATEGORY 40.713100E+030.730700E+030.773900E+030.824700E+030.841300E+030.636100E+03
STABILITY CATEGORY 50.100000E+050.100000E+050.100000E+050.100000E+050.100000E+050.100000E+05
STABILITY CATEGORY 60.100000E+050.100000E+050.100000E+050.100000E+050.100000E+050.100000E+05

**** ISCLT ************** LESSON 12 COARSE-GRID -- 1979                                  ********* PAGE      6 ****

                                      - SOURCE INPUT DATA -

C T SOURCE SOURCE     X          Y       EMISSION  BASE /
A A NUMBER  TYPE  COORDINATE  COORDINATE  HEIGHT  ELEV- /                - SOURCE DETAILS DEPENDING ON TYPE -
R P                  (M)         (M)        (M)   ATION /
D E                                                (M)  /
------------------------------------------------------------------------------------------------------------------
X     1001  STACK    73000.00    83000.00  42.67    0.00 GAS EXIT TEMP (DEG K)= 505.20, GAS EXIT VEL. (M/SEC)=  4.00,
                                                         STACK DIAMETER (M)= 1.680, HEIGHT OF ASSO. BLDG. (M)=  23.50, WIDTH OF
                                                         ASSO. BLDG. (M)=  39.90, WAKE EFFECTS FLAG = 0
                                                               - SOURCE STRENGTHS ( GRAMS PER SEC                  ) -
                                                                   SEASON 1     SEASON 2     SEASON 3     SEASON 4
                                                                  1.40000E+01
WARNING - DISTANCE BETWEEN SOURCE   1001 AND POINT X,Y=   73000.00,   83000.00 IS LESS THAN PERMITTED
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Table 12.4 ACTUAL AREA OF IMPACT -- WIDGET (SELECTED PORTIONS) (cont.)

**** ISCLT ************* LESSON 12 COARSE-GRID -- 1979 ******** PAGE 7 ****

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) DUE TO SOURCE 1001 **

- GRID SYSTEM RECEPTORS -
- X AXIS (DISTANCE, METERS) -
- CONCENTRATION -

Y AXIS (DISTANCE, METERS)	65500.000	66000.000	66500.000	67000.000	67500.000	68000.000	68500.000	69000.000	69500.000
88000.000	0.385820	0.399681	0.413601	0.427359	0.440667	0.453160	0.454521	0.451541	0.443069
87500.000	0.408607	0.425116	0.442014	0.459101	0.476094	0.492609	0.508156	0.509335	0.504431
87000.000	0.432137	0.451601	0.471886	0.492840	0.514219	0.535659	0.556640	0.576480	0.577238
86500.000	0.456164	0.478872	0.502941	0.528305	0.554814	0.582175	0.609912	0.637305	0.663388
86000.000	0.476049	0.506567	0.534770	0.565053	0.597417	0.631736	0.667678	0.704620	0.741548
85500.000	0.478637	0.514985	0.556253	0.602419	0.641286	0.683531	0.729138	0.777788	0.828651
85000.000	0.478878	0.516038	0.558490	0.607320	0.663886	0.729866	0.792818	0.855234	0.924610
84500.000	0.476580	0.514061	0.557084	0.606877	0.665012	0.733504	0.814942	0.912607	1.029341
84000.000	0.471637	0.508893	0.551788	0.601640	0.660167	0.729633	0.813047	0.913987	1.046098
83500.000	0.464046	0.500511	0.542545	0.591489	0.649119	0.717811	0.800798	0.904277	1.036129
83000.000	0.453916	0.489051	0.529521	0.576627	0.632108	0.698313	0.778484	0.876612	1.007849
82500.000	0.441532	0.474215	0.511559	0.554610	0.604728	0.663688	0.733822	0.820298	0.928158
82000.000	0.427442	0.457337	0.491121	0.529556	0.573583	0.624342	0.683196	0.751202	0.839105
81500.000	0.411977	0.438867	0.468839	0.502369	0.539989	0.582248	0.629646	0.682436	0.756884
81000.000	0.395497	0.41[illegible]	0.445380	0.473980	0.505269	0.539322	0.589839	0.656777	0.739925
80500.000	0.378364	0.3[illegible]2	0.421386	0.446131	0.486077	0.532064	0.585277	0.647051	0.718758
80000.000	0.360921	0.383208	0.413023	0.446667	0.484787	0.528119	0.577471	0.633650	0.697348

- GRID SYSTEM RECEPTORS -
- X AXIS (DISTANCE, METERS) -
- CONCENTRATION -

Y AXIS (DISTANCE, METERS)	70000.000	70500.000	71000.000	71500.000	72000.000	72500.000	73000.000	73500.000	74000.000
88000.000	0.427896	0.404909	0.385747	0.439018	0.493063	0.545489	0.593660	0.489463	0.383910
87500.000	0.491711	0.469422	0.436129	0.472492	0.539160	0.604404	0.664276	0.535129	0.404879
87000.000	0.569126	0.549449	0.515685	0.509008	0.592432	0.676595	0.751562	0.588256	0.423881
86500.000	0.663175	0.649372	0.619153	0.568631	0.659162	0.768413	0.869317	0.653684	0.440361
86000.000	0.777075	0.779461	0.754595	0.700919	0.730539	0.877979	1.015635	0.723680	0.440510
85500.000	0.885969	0.936279	0.928135	0.881772	0.812061	1.019736	1.218525	0.802195	0.412341
85000.000	1.002463	1.078270	1.154327	1.137399	1.046131	1.199337	1.506259	0.873082	0.494881
84500.000	1.128610	1.238710	1.362946	1.494685	1.436795	1.417982	1.940803	0.887588	0.650127
84000.000	1.202236	1.404437	1.600336	1.807591	2.045908	1.855043	2.667109	0.949119	0.867778
83500.000	1.197900	1.413164	1.702707	2.089458	2.553601	3.054394	3.888414	1.415260	0.977223
83000.000	1.167841	1.385054	1.688157	2.124853	2.804950	3.697898	0.000000	2.307272	1.563774
82500.000	1.055639	1.219625	1.427688	1.682760	2.077358	2.937469	4.759393	1.856892	1.097666
82000.000	0.932141	1.042671	1.233673	1.501649	1.873310	1.862297	3.399256	1.390634	1.079881
81500.000	0.863973	0.996892	1.167236	1.378920	1.414239	1.590000	2.538637	1.308692	0.906256
81000.000	0.841691	0.956042	1.090951	1.126043	1.125267	1.452044	2.007411	1.259044	0.768395
80500.000	0.813520	0.909830	0.934197	0.941504	0.952925	1.292208	1.647434	1.151424	0.685335
80000.000	0.768915	0.800932	0.810604	0.806989	0.907116	1.147641	1.390361	1.040125	0.699168

Table 12.4 ACTUAL AREA OF IMPACT -- WIDGET (SELECTED PORTIONS) (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) DUE TO SOURCE 1001 (CONT.) **

- GRID SYSTEM RECEPTORS -

- X AXIS (DISTANCE, METERS) -

Y AXIS (DISTANCE , METERS)	74500.000	75000.000	75500.000
	- CONCENTRATION -		
88000.000	0.281893	0.187301	0.180212
87500.000	0.280769	0.199688	0.205760
87000.000	0.270857	0.232062	0.236686
86500.000	0.266366	0.273154	0.274189
86000.000	0.320950	0.324925	0.321843
85500.000	0.392560	0.388545	0.376375
85000.000	0.488738	0.466940	0.399651
84500.000	0.613093	0.502941	0.417789
84000.000	0.669466	0.528391	0.436843
83500.000	0.777247	0.660496	0.563277
83000.000	1.114701	0.855504	0.687374
82500.000	0.811137	0.668364	0.560839
82000.000	0.760777	0.552719	0.426752
81500.000	0.735325	0.562855	0.437172
81000.000	0.651233	0.544201	0.439393
80500.000	0.577960	0.498856	0.427554
80000.000	0.517411	0.457164	0.400167

Table 12.5 COMBINED AJAX AND WIDGET IMPACT (SELECTED PORTIONS)

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**** ISCLT ************** LESSON 12 COARSE-GRID -- 1979                                                    ********* PAGE      6 ****

                                              - SOURCE INPUT DATA -

C T SOURCE SOURCE     X          Y       EMISSION  BASE /
A A NUMBER  TYPE  COORDINATE  COORDINATE  HEIGHT  ELEV- /                - SOURCE DETAILS DEPENDING ON TYPE -
R P                  (M)         (M)        (M)   ATION /
D E                                                 (M)  /
---------------------------------------------------------------------------------------------------------------------------
X      101  STACK   68500.00   84900.00  18.20    0.00 GAS EXIT TEMP (DEG K)= 394.00, GAS EXIT VEL. (M/SEC)= 18.50,
                                                       STACK DIAMETER (M)= 1.210, HEIGHT OF ASSO. BLDG. (M)=   0.00, WIDTH OF
                                                       ASSO. BLDG. (M)=   0.00, WAKE EFFECTS FLAG = 0
                                                             - SOURCE STRENGTHS ( GRAMS PER SEC                    ) -
                                                                   SEASON 1     SEASON 2     SEASON 3     SEASON 4
                                                                 3.00000E+01

**** ISCLT ************** LESSON 12 COARSE-GRID -- 1979                                                    ********* PAGE      9 ****

                                              - SOURCE INPUT DATA -

C T SOURCE SOURCE     X          Y       EMISSION  BASE /
A A NUMBER  TYPE  COORDINATE  COORDINATE  HEIGHT  ELEV- /                - SOURCE DETAILS DEPENDING ON TYPE -
R P                  (M)         (M)        (M)   ATION /
D E                                                 (M)  /
---------------------------------------------------------------------------------------------------------------------------
X     1001  STACK   73000.00   83000.00  42.67    0.00 GAS EXIT TEMP (DEG K)= 505.20, GAS EXIT VEL. (M/SEC)=  4.00,
                                                       STACK DIAMETER (M)= 1.680, HEIGHT OF ASSO. BLDG. (M)=  23.50, WIDTH OF
                                                       ASSO. BLDG. (M)=  39.90, WAKE EFFECTS FLAG = 0
                                                             - SOURCE STRENGTHS ( GRAMS PER SEC                    ) -
                                                                   SEASON 1     SEASON 2     SEASON 3     SEASON 4
                                                                 1.40000E+01
WARNING - DISTANCE BETWEEN SOURCE   1001 AND POINT X,Y=   73000.00,   83000.00 IS LESS THAN PERMITTED
```

Table 12.5 COMBINED AJAX AND WIDGET IMPACT (SELECTED PORTIONS) (cont.)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) FROM COMBINED SOURCES 101, 1001,

- GRID SYSTEM RECEPTORS -
- X AXIS (DISTANCE, METERS) -

Y AXIS (DISTANCE, METERS)	65500.000	66000.000	66500.000	67000.000	67500.000	68000.000	68500.000	69000.000	69500.000
	- CONCENTRATION -								
88000.000	2.522558	2.496049	2.411558	2.260028	2.385591	2.774568	3.139931	2.389980	1.657426
87500.000	2.808372	2.909061	2.853797	2.706326	2.577340	3.089094	3.600079	2.592113	1.640595
87000.000	3.102495	3.277371	3.412961	3.290884	3.026292	3.463300	4.195994	2.780104	1.810924
86500.000	3.419467	3.652028	3.884396	4.073958	3.825540	3.875661	4.996136	2.844784	2.195274
86000.000	3.654351	4.045026	4.355605	4.683836	4.951021	4.448386	6.160220	2.798277	2.617641
85500.000	3.619400	4.063478	4.608118	5.222585	5.643331	5.532576	6.719737	3.217617	2.785071
85000.000	3.539371	3.982687	4.543928	5.219229	5.986969	4.857932	0.793429	3.771078	3.768415
84500.000	3.297798	3.634271	4.021172	4.393296	4.671384	4.862138	5.611121	4.359182	3.605620
84000.000	3.017089	3.241508	3.507085	3.876827	4.310419	4.290433	7.884726	4.099653	3.671260
83500.000	2.828314	3.118688	3.430368	3.779722	3.773064	4.050651	6.749580	3.886184	3.319985
83000.000	2.818837	3.101761	3.397397	3.430585	3.376150	4.163610	5.816862	3.982270	3.012500
82500.000	2.805699	3.067698	3.133231	3.103198	3.061998	4.000113	5.091478	3.829051	2.722205
82000.000	2.780306	2.843897	2.844893	2.827241	3.064985	3.763777	4.525698	3.600949	2.746405
81500.000	2.596727	2.607351	2.601342	2.583188	2.967243	3.495804	4.048834	3.345898	2.682847
81000.000	2.398928	2.400895	2.390753	2.457464	2.831266	3.236591	3.664857	3.138730	2.634357
80500.000	2.223300	2.219590	2.206662	2.381294	2.696306	3.032448	3.376160	2.961109	2.555752
80000.000	2.066555	2.063477	2.073687	2.315860	2.577667	2.852222	3.130539	2.795520	2.465356

- GRID SYSTEM RECEPTORS -
- X AXIS (DISTANCE, METERS) -

Y AXIS (DISTANCE, METERS)	70000.000	70500.000	71000.000	71500.000	72000.000	72500.000	73000.000	73500.000	74000.000
	- CONCENTRATION -								
88000.000	1.282905	1.281502	1.269842	1.317789	1.305227	1.288507	1.277832	1.123129	0.973816
87500.000	1.514737	1.499458	1.456293	1.401621	1.376489	1.365808	1.362226	1.179374	1.003102
87000.000	1.797710	1.759777	1.596063	1.463470	1.446813	1.449625	1.457723	1.238503	1.048038
86500.000	2.136914	1.924922	1.720323	1.534436	1.519418	1.557600	1.626137	1.376915	1.130333
86000.000	2.321562	2.058490	1.849396	1.719753	1.694835	1.786608	1.870376	1.528187	1.198728
85500.000	2.427464	2.387036	2.262564	2.110041	1.936620	2.054348	2.174333	1.689275	1.239093
85000.000	3.265074	2.977434	2.790637	2.582237	2.332372	2.358797	2.561101	1.840483	1.387957
84500.000	3.170341	2.941107	2.830500	2.794975	2.601240	2.473962	2.906994	1.778354	1.476420
84000.000	3.085541	2.790643	2.761258	2.858109	3.006782	2.742196	3.491336	1.719008	1.590033
83500.000	3.089952	2.868642	2.840523	2.995961	3.315153	3.773957	4.570544	2.063475	1.594355
83000.000	2.895044	2.836011	2.860527	3.080234	3.593838	4.357965	0.559507	2.838290	2.078598
82500.000	2.636402	2.587032	2.592080	2.655105	2.894955	3.631025	5.353427	2.370570	1.545920
82000.000	2.392084	2.326135	2.350809	2.466876	2.699673	2.573477	4.015331	1.928129	1.552191
81500.000	2.218561	2.206493	2.235778	2.316883	2.234526	2.305911	3.165966	1.861129	1.395370
81000.000	2.193647	2.098874	2.113676	2.034951	1.929724	2.162921	2.637246	1.818849	1.267869
80500.000	2.199789	1.992053	1.913552	1.821477	1.739855	1.993923	2.273026	1.712416	1.189683
80000.000	2.158654	1.842147	1.748800	1.658131	1.675402	1.838780	2.010783	1.597449	1.203510

Table 12.5 COMBINED AJAX AND WIDGET IMPACT (SELECTED PORTIONS)

** ANNUAL GROUND LEVEL CONCENTRATION (MICROGRAMS PER CUBIC METER) (CONT.) FROM COMBINED SOURCES 101 1001,

- GRID SYSTEM RECEPTORS -

- X AXIS (DISTANCE, METERS) -

Y AXIS (DISTANCE, METERS)	74500.000	75000.000	75500.000
	- CONCENTRATION -		
88000.000	0.833516	0.704776	0.666779
87500.000	0.839072	0.730661	0.718923
87000.000	0.872132	0.810332	0.791909
86500.000	0.924219	0.900403	0.872414
86000.000	1.036721	1.001806	0.963063
85500.000	1.165984	1.114493	1.059786
85000.000	1.317747	1.240072	1.123542
84500.000	1.383489	1.224284	1.095657
84000.000	1.349476	1.170570	1.044861
83500.000	1.365690	1.222328	1.100324
83000.000	1.613325	1.338035	1.153945
82500.000	1.224100	1.074548	0.958999
82000.000	1.178690	0.924842	0.759925
81500.000	1.170749	0.952401	0.787283
81000.000	1.098725	0.946495	0.802595
80500.000	1.032439	0.909717	0.800249
80000.000	0.974770	0.872933	0.779133

** END OF ISCLT PROGRAM, 2 SOURCES PROCESSED **

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS)

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1001	0	0	0	.16000E+02	.0	.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 172.70600 AND OCCURRED AT (300.0, 110.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
360.0 /	116.96790 (91, 6)	142.23530 (281, 8)	136.75760 (19, 8)	119.15710 (19, 8)	124.00070 (158, 6)
350.0 /	98.85799 (207, 4)	114.93350 (207, 4)	114.10070 (207, 4)	106.65130 (140, 4)	103.37120 (140, 4)
340.0 /	98.28539 (87, 6)	117.16100 (87, 6)	128.10480 (97, 5)	121.92910 (97, 5)	113.23810 (170, 5)
330.0 /	98.17015 (140, 1)	117.98340 (140, 1)	103.60720 (101, 3)	89.34844 (78, 6)	85.24573 (78, 6)
320.0 /	94.00271 (206, 7)	110.36490 (206, 7)	124.98950 (122, 6)	116.53860 (357, 2)	112.94870 (357, 2)
310.0 /	111.14830 (293, 1)	151.48730 (293, 1)	142.43070 (346, 4)	131.47270 (346, 4)	125.91140 (346, 4)
300.0 /	100.31810 (324, 7)	126.63850 (324, 7)	123.57850 (76, 8)	120.12990 (261, 4)	119.25940 (261, 4)
290.0 /	85.84162 (77, 6)	102.83180 (77, 6)	113.01380 (100, 5)	105.79820 (100, 5)	102.97750 (100, 5)
280.0 /	92.13950 (324, 8)	111.62360 (76, 7)	114.74030 (288, 6)	104.74100 (288, 6)	103.82860 (288, 6)
270.0 /	71.42412 (263, 1)	89.31677 (263, 1)	103.82760 (262, 8)	104.91080 (160, 5)	111.74890 (160, 5)
260.0 /	80.63538 (204, 2)	105.57140 (287, 8)	105.77960 (262, 7)	100.14990 (135, 5)	103.45800 (135, 5)
250.0 /	100.16150 (137, 1)	125.86460 (137, 1)	107.98020 (287, 3)	106.91340 (120, 4)	105.30870 (120, 4)
240.0 /	104.25180C(139, 2)	140.19450C(139, 2)	133.36230 (204, 1)	123.78020 (204, 1)	119.26310 (204, 1)
230.0 /	119.84990 (203, 2)	159.56070 (203, 2)	124.10960 (242, 1)	90.87958 (242, 1)	83.74999 (257, 4)
220.0 /	92.33008 (117, 1)	123.78540 (342, 8)	126.52830 (117, 1)	107.92140 (136, 6)	107.46440 (136, 6)
210.0 /	91.71875 (287, 1)	120.38500 (287, 1)	102.13520 (336, 5)	99.49188 (336, 5)	95.51966 (336, 5)
200.0 /	107.91090 (252, 1)	139.43080 (252, 1)	134.39150 (255, 5)	118.50390 (255, 5)	109.16180 (255, 5)
190.0 /	107.98000 (54, 7)	122.40230 (257, 8)	131.59340 (258, 6)	120.33380 (258, 6)	114.59380 (258, 6)
180.0 /	120.58860 (363, 1)	160.73720 (363, 1)	133.92260 (162, 5)	126.00940 (162, 5)	118.01530 (133, 6)
170.0 /	109.66740 (31, 6)	135.99350 (31, 6)	134.51070 (8, 4)	121.17450 (8, 4)	113.61920 (8, 4)
160.0 /	129.40350 (143, 8)	162.82580 (143, 8)	129.50690 (14, 5)	113.92120 (14, 5)	104.64420 (14, 5)
150.0 /	112.41250 (14, 2)	134.10000 (14, 2)	129.75260 (14, 2)	111.79080 (14, 2)	106.83630 (175, 7)
140.0 /	107.26390 (365, 8)	134.83710 (365, 8)	111.48390 (13, 8)	101.47920 (364, 5)	96.68165 (364, 5)
130.0 /	115.85320 (56, 3)	137.86470 (56, 3)	134.90960 (56, 3)	115.79380 (56, 3)	103.97310 (56, 3)
120.0 /	127.04110 (56, 7)	160.67430 (56, 7)	154.47060 (21, 1)	135.06420 (21, 1)	123.80000 (21, 1)
110.0 /	117.90180 (21, 2)	154.37830 (21, 2)	172.70600 (21, 2)	154.69370 (21, 2)	145.08310 (21, 2)
100.0 /	77.56066 (359, 3)	102.81500 (359, 2)	90.86145 (37, 8)	96.57546 (116, 4)	98.05566 (116, 4)
90.0 /	79.70324 (358, 8)	99.78913 (358, 8)	103.69880 (103, 4)	120.22740 (103, 4)	122.07010 (103, 4)
80.0 /	81.67902 (358, 7)	101.78740 (358, 7)	87.12136 (66, 4)	96.15108 (66, 4)	98.13372 (66, 4)
70.0 /	99.37536 (264, 1)	123.01720 (264, 1)	100.94390 (264, 1)	96.07718 (209, 5)	95.78402 (209, 5)
60.0 /	80.97849 (66, 2)	98.89506C(180, 2)	87.61993C(180, 2)	87.62920 (279, 5)	90.25839 (43, 5)
50.0 /	104.95040 (185, 8)	129.04490 (185, 8)	106.61790 (46, 5)	97.69091 (279, 5)	94.37588 (279, 5)
40.0 /	104.42980 (183, 8)	133.75880 (183, 8)	117.22690 (73, 1)	107.95480 (73, 1)	103.42800 (73, 1)
30.0 /	112.00140 (276, 7)	135.67250 (276, 7)	119.28250 (276, 7)	90.17554 (276, 7)	82.00006 (147, 4)
20.0 /	100.95770 (45, 5)	120.07080 (45, 5)	122.04170 (45, 5)	117.61680 (85, 6)	114.62310 (85, 6)
10.0 /	92.35942 (174, 8)	124.84670 (174, 8)	104.78770 (208, 6)	102.78450 (208, 6)	98.90272 (208, 6)

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 172.70600 AND OCCURRED AT (300.0, 110.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 700.0	900.0	1200.0	1600.0	2200.0
360.0 /	114.26460 (158, 6)	97.17014 (158, 6)	78.25827 (103, 1)	64.52496 (103, 1)	50.23061 (157, 8)
350.0 /	83.78020 (140, 4)	66.62049 (126, 6)	57.80047 (195, 1)	49.96202 (195, 1)	40.77518 (195, 1)
340.0 /	92.55312 (170, 5)	73.81052 (97, 5)	58.33972 (41, 4)	45.81099 (295, 2)	34.85936 (295, 3)
330.0 /	77.24721 (78, 6)	71.03873 (113, 6)	62.21441 (113, 6)	52.62663 (354, 6)	44.14650 (354, 6)
320.0 /	105.40220 (357, 2)	97.41580 (357, 2)	85.70298 (357, 2)	71.99458 (357, 2)	56.14802 (357, 2)
310.0 /	115.37510 (346, 4)	105.23830 (346, 4)	91.31527 (346, 4)	75.80901 (346, 4)	59.70828 (110, 6)
300.0 /	103.58050 (76, 8)	98.27039 (113, 8)	90.06289 (113, 8)	78.69184 (113, 8)	63.84292 (113, 8)
290.0 /	97.12157 (100, 5)	90.72291 (100, 5)	83.92125 (25, 7)	75.92355 (25, 7)	65.07025 (25, 7)
280.0 /	96.76440 (288, 6)	85.93551 (288, 6)	72.23873 (288, 6)	58.53576 (288, 6)	48.72551 (25, 8)
270.0 /	95.77157 (160, 5)	82.13503 (50, 4)	72.55601 (50, 4)	62.00233 (50, 4)	50.16469 (50, 4)
260.0 /	87.60885 (262, 7)	80.58969 (262, 7)	70.49931 (262, 7)	58.85110 (262, 7)	45.53390 (262, 7)
250.0 /	88.37883 (120, 4)	81.32358 (319, 4)	67.02095 (319, 4)	59.01984 (362, 6)	52.71028 (362, 6)
240.0 /	110.44060 (204, 1)	101.60730 (204, 1)	89.05080 (204, 1)	74.63458 (204, 1)	62.90913 (260, 1)
230.0 /	73.04536 (253, 6)	68.05185 (253, 6)	59.88402 (119, 5)	55.60949 (119, 5)	47.75419 (119, 5)
220.0 /	93.88204 (117, 1)	86.08912 (117, 1)	76.60615 (117, 1)	65.93024 (117, 1)	53.61312 (117, 1)
210.0 /	83.81712 (132, 3)	85.48727 (132, 3)	76.75305 (132, 3)	63.61800 (132, 3)	49.42336 (132, 3)
200.0 /	94.52179 (255, 5)	82.83957 (255, 5)	68.89071 (255, 5)	55.03565 (255, 5)	42.48266 (117, 6)
190.0 /	104.62300 (258, 6)	95.53112 (258, 6)	83.26306 (258, 6)	69.58795 (258, 6)	54.16038 (258, 6)
180.0 /	109.29970 (133, 6)	97.40939 (133, 6)	80.76952 (133, 6)	63.64003 (133, 6)	56.38066 (364, 3)
170.0 /	100.93180 (8, 4)	90.06652 (8, 4)	76.36032 (8, 4)	62.09925 (8, 4)	48.68008 (38, 7)
160.0 /	92.54983 (31, 2)	82.32074 (31, 2)	69.50446 (31, 2)	60.71218 (277, 6)	49.75574 (277, 6)
150.0 /	98.92101 (175, 7)	91.10201 (175, 7)	79.98650 (175, 7)	67.16567 (175, 7)	52.41872 (175, 7)
140.0 /	87.99288 (364, 5)	79.87722 (364, 5)	68.90787 (364, 5)	56.83001 (364, 5)	43.49376 (364, 5)
130.0 /	87.20101 (28, 4)	73.79895 (56, 3)	59.57726 (56, 3)	46.93253 (94, 2)	38.33949 (23, 5)
120.0 /	107.65720 (21, 1)	95.90041 (21, 1)	82.60155 (21, 1)	69.52511 (21, 1)	55.65704 (21, 1)
110.0 /	130.05580 (21, 2)	117.59230 (21, 2)	101.76130 (21, 2)	84.87204 (21, 2)	66.56378 (21, 2)
100.0 /	93.30018 (220, 6)	94.17147 (220, 6)	83.64976 (220, 6)	67.99283 (220, 6)	50.75498 (220, 6)
90.0 /	108.02440 (103, 4)	90.55224 (103, 4)	69.54745 (103, 4)	50.94756 (103, 4)	36.51431 (73, 3)
80.0 /	90.20788 (66, 4)	78.18340 (66, 4)	62.12906 (66, 4)	46.95775 (66, 4)	33.80288 (187, 1)
70.0 /	75.84175 (211, 3)	68.14358 (211, 3)	56.51307 (211, 3)	44.36669 (211, 3)	32.26845 (211, 3)
60.0 /	83.58341 (43, 5)	72.90005 (43, 5)	59.03684 (43, 5)	45.91627 (43, 5)	34.79660 (183, 1)
50.0 /	76.60512 (279, 5)	63.99341 (175, 6)	53.91375 (175, 6)	43.60600 (175, 6)	33.20230 (45, 3)
40.0 /	95.01677 (73, 1)	86.91317 (73, 1)	75.66032 (73, 1)	64.98652 (45, 1)	53.01147 (45, 1)
30.0 /	74.23837 (147, 4)	62.04455 (147, 4)	49.23612 (209, 3)	45.69990 (92, 3)	39.82835 (92, 3)
20.0 /	103.41130 (85, 6)	91.19994 (85, 6)	75.47076 (85, 6)	59.81802 (85, 6)	44.19355 (85, 6)
10.0 /	86.65461 (208, 6)	74.24460 (208, 6)	59.13751 (208, 6)	45.00634 (208, 6)	37.75030 (72, 4)

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 95.34115 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
360.0 /	37.66672 (101, 1)	44.80991 (102, 1)	50.61587 (102, 1)	45.15719 (102, 1)	42.15544 (102, 1)
350.0 /	31.82699 (91, 1)	38.05516 (91, 1)	39.82697 (102, 1)	35.31567 (123, 1)	32.93047 (123, 1)
340.0 /	27.56151C(97, 1)	33.96197C(97, 1)	39.25588C(97, 1)	36.58582C(97, 1)	34.15562C(97, 1)
330.0 /	43.44617 (101, 1)	50.31338 (101, 1)	49.93945 (101, 1)	42.18680 (101, 1)	37.43931 (101, 1)
320.0 /	45.44833 (294, 1)	55.47338 (294, 1)	56.63356 (294, 1)	47.43115 (294, 1)	42.24368 (294, 1)
310.0 /	56.12524 (303, 1)	67.88498 (303, 1)	65.89507 (303, 1)	53.59501 (303, 1)	48.26878 (303, 1)
300.0 /	55.63268 (77, 1)	67.38881 (77, 1)	65.02948 (77, 1)	53.08913 (77, 1)	47.49118 (76, 1)
290.0 /	34.59235 (77, 1)	41.26372 (77, 1)	40.98007 (77, 1)	37.72232 (16, 1)	37.60685 (16, 1)
280.0 /	35.90125 (204, 1)	42.77660 (204, 1)	45.24146 (204, 1)	39.07436 (204, 1)	36.07121 (26, 1)
270.0 /	24.56505 (204, 1)	28.79172 (204, 1)	36.36818C(160, 1)	41.70060C(160, 1)	40.73632C(160, 1)
260.0 /	37.96839 (36, 1)	45.83019 (36, 1)	47.80564 (36, 1)	42.06149 (36, 1)	38.86735 (36, 1)
250.0 /	45.18209 (36, 1)	55.23696 (36, 1)	58.18978 (36, 1)	51.52756 (36, 1)	47.83379 (36, 1)
240.0 /	29.40333 (11, 1)	36.40556 (11, 1)	37.77002 (11, 1)	32.92683 (11, 1)	30.73618C(120, 1)
230.0 /	33.26316 (253, 1)	44.01396 (253, 1)	41.18745 (253, 1)	33.78623 (253, 1)	32.32070C(228, 1)
220.0 /	35.33607C(336, 1)	43.23982C(336, 1)	45.89509C(136, 1)	50.52331C(136, 1)	49.08571C(136, 1)
210.0 /	31.31867C(257, 1)	40.61428C(257, 1)	44.59135C(257, 1)	39.82539C(257, 1)	37.01909C(257, 1)
200.0 /	53.03542 (162, 1)	65.88039 (162, 1)	65.21028 (162, 1)	55.44769 (162, 1)	49.81194 (162, 1)
190.0 /	33.83208 (162, 1)	38.69656 (162, 1)	36.61901 (162, 1)	31.84596C(198, 1)	32.70756C(198, 1)
180.0 /	77.85375 (8, 1)	95.34115 (8, 1)	84.74927 (8, 1)	66.85857 (8, 1)	57.48824 (8, 1)
170.0 /	38.54738C(31, 1)	45.56001C(31, 1)	43.78163C(31, 1)	36.44895C(31, 1)	32.22299C(31, 1)
160.0 /	34.84975C(31, 1)	42.34593C(31, 1)	43.48237C(31, 1)	38.31170C(31, 1)	35.25256C(31, 1)
150.0 /	48.58414 (14, 1)	58.17288 (14, 1)	56.09599 (14, 1)	47.99258 (14, 1)	43.15688 (14, 1)
1[illegible] /	34.41357 (27, 1)	41.64699 (27, 1)	38.62329 (27, 1)	31.45505 (27, 1)	28.22810C(57, 1)
130.0 /	43.16475 (56, 1)	49.31375 (56, 1)	50.51580 (27, 1)	46.19908 (27, 1)	43.48473 (27, 1)
120.0 /	51.40861 (56, 1)	59.16299 (56, 1)	52.04696 (56, 1)	41.56588 (56, 1)	35.87289 (56, 1)
110.0 /	26.46573 (56, 1)	35.29128C(21, 1)	38.62938C(21, 1)	33.83438C(21, 1)	31.12664C(21, 1)
100.0 /	28.58461C(359, 1)	38.65036C(359, 1)	32.60827C(359, 1)	26.12325C(359, 1)	23.39724C(359, 1)
90.0 /	23.84633C(223, 1)	31.66055C(223, 1)	43.02193C(223, 1)	45.34686C(223, 1)	44.16941C(223, 1)
80.0 /	28.95852 (358, 1)	35.31816 (358, 1)	35.13761C(66, 1)	34.17128C(66, 1)	33.21739C(66, 1)
70.0 /	25.48390C(66, 1)	30.49862C(66, 1)	30.13879C(279, 1)	28.12559C(279, 1)	26.30898 (211, 1)
60.0 /	21.77389C(279, 1)	26.49654C(180, 1)	29.54142C(279, 1)	28.78941C(279, 1)	26.74720C(279, 1)
50.0 /	32.23009C(279, 1)	40.18907C(279, 1)	41.61807C(279, 1)	36.97868C(279, 1)	34.36966C(279, 1)
40.0 /	32.03513 (98, 1)	39.56348 (98, 1)	42.85693 (98, 1)	37.90704 (98, 1)	35.02836 (98, 1)
30.0 /	27.03703C(276, 1)	32.43968C(276, 1)	31.11551 (46, 1)	27.88272 (46, 1)	26.51622C(156, 1)
20.0 /	32.92199C(72, 1)	41.01298C(72, 1)	45.03654C(72, 1)	40.04709C(72, 1)	37.24935C(72, 1)
10.0 /	22.07771C(313, 1)	29.22108C(174, 1)	30.62232C(174, 1)	30.77157C(139, 1)	28.93360C(139, 1)

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 95.34115 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 700.0	900.0	1200.0	1600.0	2200.0
360.0 /	37.27905 (102, 1)	33.17599 (102, 1)	28.03264 (102, 1)	22.69581 (102, 1)	17.06178 (102, 1)
350.0 /	29.12485 (123, 1)	25.95809 (123, 1)	22.00078 (123, 1)	17.88817 (123, 1)	13.52551 (123, 1)
340.0 /	29.10590C(97, 1)	24.78851C(97, 1)	19.90825C(97, 1)	15.44365C(97, 1)	11.91534C(295, 1)
330.0 /	30.66840 (101, 1)	25.82561 (101, 1)	22.36643 (123, 1)	18.63695 (123, 1)	14.44229 (123, 1)
320.0 /	35.79896 (294, 1)	31.62102 (325, 1)	26.78875 (325, 1)	21.74766 (294, 1)	16.62893 (294, 1)
310.0 /	41.06734 (303, 1)	35.67607 (303, 1)	29.70459 (303, 1)	24.44550C(52, 1)	20.10241C(52, 1)
300.0 /	41.32723 (76, 1)	38.04401 (345, 1)	33.66029 (345, 1)	28.36230 (345, 1)	22.27104 (345, 1)
290.0 /	37.00216 (16, 1)	35.77778 (16, 1)	33.22708 (16, 1)	29.43299 (16, 1)	24.20872 (16, 1)
280.0 /	34.40744 (26, 1)	32.47506 (26, 1)	29.36836 (26, 1)	25.47108 (26, 1)	20.78454 (26, 1)
270.0 /	32.72408C(160, 1)	25.58028C(160, 1)	20.80901 (262, 1)	17.49256 (260, 1)	15.19629C(18, 1)
260.0 /	33.87267 (36, 1)	29.82622 (36, 1)	24.90268 (36, 1)	19.92652 (36, 1)	14.79134 (36, 1)
250.0 /	41.95581 (36, 1)	37.11353 (36, 1)	31.14694 (36, 1)	25.05121 (36, 1)	19.35331C(362, 1)
240.0 /	30.24390C(337, 1)	29.07142C(337, 1)	26.09026C(337, 1)	22.07778C(337, 1)	17.51595C(337, 1)
230.0 /	29.06518 (253, 1)	25.60520 (253, 1)	21.45695 (253, 1)	17.52055 (253, 1)	13.81181 (253, 1)
220.0 /	41.28995C(136, 1)	34.01853C(136, 1)	26.61575C(136, 1)	21.80476C(12, 1)	17.63020C(12, 1)
210.0 /	31.98968C(257, 1)	27.76827C(257, 1)	22.97512C(257, 1)	18.63736 (48, 1)	15.38683 (48, 1)
200.0 /	41.99356 (162, 1)	35.95227 (162, 1)	29.50208 (162, 1)	23.66096 (162, 1)	18.13091 (162, 1)
190.0 /	29.25583C(198, 1)	25.10080C(198, 1)	21.17460C(198, 1)	17.93553C(198, 1)	14.98129C(198, 1)
180.0 /	51.40219 (49, 1)	46.37193 (49, 1)	39.78062 (49, 1)	32.67529 (49, 1)	24.93306 (49, 1)
170.0 /	27.41855 (305, 1)	24.75468 (305, 1)	21.70230 (305, 1)	18.55376 (305, 1)	15.10686 (305, 1)
160.0 /	30.49173C(31, 1)	26.47446C(31, 1)	21.76260C(31, 1)	17.98373 (125, 1)	14.23743 (125, 1)
150.0 /	36.16604 (14, 1)	31.02113 (14, 1)	25.25603 (14, 1)	19.83509 (14, 1)	14.54750 (14, 1)
140.0 /	25.73156C(57, 1)	22.23938C(57, 1)	17.96685C(57, 1)	14.99993C(364, 1)	11.64625C(364, 1)
130.0 /	38.40446 (27, 1)	33.76433 (27, 1)	27.96911 (27, 1)	22.18544 (27, 1)	16.36857 (27, 1)
120.0 /	29.87704C(327, 1)	27.98722C(327, 1)	25.02160C(327, 1)	21.34495C(327, 1)	16.89267C(327, 1)
110.0 /	27.09822C(21, 1)	23.98349C(21, 1)	20.28729C(21, 1)	16.59277C(21, 1)	12.80138C(21, 1)
100.0 /	20.26685C(359, 1)	18.03093C(359, 1)	15.68848C(359, 1)	13.53935C(359, 1)	11.40646C(359, 1)
90.0 /	38.23578C(223, 1)	32.07883C(223, 1)	25.20910C(223, 1)	19.24208C(223, 1)	14.01230C(223, 1)
80.0 /	30.14592C(66, 1)	26.82812C(66, 1)	22.51545C(66, 1)	18.19486C(66, 1)	13.89309C(66, 1)
70.0 /	22.34470 (211, 1)	18.36736 (211, 1)	15.87487C(329, 1)	13.79120C(329, 1)	11.22887C(329, 1)
60.0 /	25.37676C(233, 1)	22.18532C(233, 1)	17.63283C(233, 1)	14.14334C(43, 1)	10.79212C(43, 1)
50.0 /	28.86959C(279, 1)	24.07726C(279, 1)	19.04405C(279, 1)	14.72941C(279, 1)	10.89056C(279, 1)
40.0 /	31.04062C(282, 1)	26.94482 (45, 1)	23.46788 (45, 1)	19.58382 (45, 1)	15.19157 (45, 1)
30.0 /	23.24526 (46, 1)	20.77985 (46, 1)	17.64853 (46, 1)	14.36118 (46, 1)	10.85596 (46, 1)
20.0 /	32.79148C(72, 1)	29.11967C(72, 1)	24.58150C(72, 1)	19.91103C(72, 1)	14.99341C(72, 1)
10.0 /	22.27512C(174, 1)	18.28462C(174, 1)	15.09728C(72, 1)	12.69392C(72, 1)	10.80760C(156, 1)

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 80.22511 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
360.0 /	35.88617 (102, 1)	43.85090 (101, 1)	43.45787C(313, 1)	37.50980 (19, 1)	35.33510 (158, 1)
350.0 /	31.25989 (102, 1)	37.05666 (102, 1)	39.69064 (123, 1)	34.53543 (102, 1)	31.55589 (102, 1)
340.0 /	27.38677 (123, 1)	33.66509C(138, 1)	34.57897 (123, 1)	29.78536 (123, 1)	27.07729 (123, 1)
330.0 /	29.62003C(88, 1)	33.60887C(88, 1)	35.69454 (123, 1)	32.49265 (123, 1)	30.90702 (123, 1)
320.0 /	39.63727 (206, 1)	47.43030 (206, 1)	47.79203 (325, 1)	42.72904 (325, 1)	39.96530 (325, 1)
310.0 /	40.54621 (294, 1)	49.98012 (294, 1)	54.06615 (294, 1)	46.93373 (294, 1)	43.12925 (294, 1)
300.0 /	48.06479 (76, 1)	59.14424 (76, 1)	60.98296 (76, 1)	52.25337 (76, 1)	46.35290 (77, 1)
290.0 /	32.49921 (76, 1)	37.49725 (76, 1)	39.58784 (16, 1)	34.30505 (77, 1)	31.17592C(129, 1)
280.0 /	29.28146 (76, 1)	35.16817 (76, 1)	39.44315 (26, 1)	36.87511 (26, 1)	35.46291 (204, 1)
270.0 /	19.7545[illegible] (262, 1)	25.36203 (262, 1)	31.64109 (262, 1)	30.07882 (262, 1)	29.20454 (262, 1)
260.0 /	20.53972 (262, 1)	25.58705 (262, 1)	30.41942 (262, 1)	27.54153 (262, 1)	26.13161 (262, 1)
250.0 /	23.40544 (262, 1)	29.51770 (262, 1)	38.46513 (203, 1)	39.22712 (203, 1)	37.99768 (203, 1)
240.0 /	22.34969C(362, 1)	28.67394C(362, 1)	32.69622C(362, 1)	31.71356 (203, 1)	30.69426 (11, 1)
230.0 /	32.49152C(242, 1)	42.94567C(242, 1)	35.70427C(242, 1)	32.09426C(228, 1)	31.84475 (253, 1)
220.0 /	32.82521C(342, 1)	43.17241C(342, 1)	45.41524C(342, 1)	43.42964C(342, 1)	41.84330C(342, 1)
210.0 /	26.87878C(163, 1)	34.23046C(163, 1)	35.87555C(163, 1)	32.05048C(163, 1)	29.27978C(136, 1)
200.0 /	30.22478 (348, 1)	38.79140C(267, 1)	43.72821 (348, 1)	39.93879 (348, 1)	38.07779 (348, 1)
190.0 /	29.46811 (296, 1)	34.97293 (296, 1)	35.66379C(47, 1)	31.70959C(47, 1)	29.60460C(47, 1)
180.0 /	66.14200 (351, 1)	80.22511 (351, 1)	72.99441 (351, 1)	60.35018 (49, 1)	57.05454 (49, 1)
170.0 /	36.93425 (8, 1)	44.98022 (305, 1)	41.73169 (305, 1)	35.10213 (8, 1)	31.57860 (8, 1)
160.0 /	31.17367 (14, 1)	37.70636 (14, 1)	37.95972 (14, 1)	32.52751 (14, 1)	31.08338 (125, 1)
150.0 /	42.82147C(2, 1)	50.54769C(2, 1)	48.77610C(2, 1)	42.60183C(2, 1)	38.37199C(2, 1)
140.0 /	28.37899C(13, 1)	33.98154C(13, 1)	34.14220C(13, 1)	29.58520C(13, 1)	27.36204 (27, 1)
130.0 /	38.32567 (27, 1)	46.97242 (27, 1)	45.94014 (56, 1)	38.11386 (56, 1)	33.36163 (56, 1)
120.0 /	31.14423C(24, 1)	37.05996C(24, 1)	36.68393C(24, 1)	32.28971C(327, 1)	31.53027C(327, 1)
110.0 /	25.53197C(21, 1)	29.56071 (56, 1)	25.61517 (56, 1)	22.49557C(143, 1)	22.50462C(274, 1)
100.0 /	24.43561C(84, 1)	28.24805C(84, 1)	22.83984C(84, 1)	21.61797C(173, 1)	22.03399C(173, 1)
90.0 /	23.37794 (358, 1)	28.98421 (358, 1)	27.17973 (358, 1)	27.64779 (116, 1)	26.98429 (116, 1)
80.0 /	24.53438C(181, 1)	31.17957C(181, 1)	33.23171 (358, 1)	26.51686 (358, 1)	25.99319 (211, 1)
70.0 /	22.70425C(274, 1)	27.41786C(274, 1)	27.18776C(66, 1)	25.83517 (211, 1)	26.05067C(279, 1)
60.0 /	21.58934C(66, 1)	26.18556C(66, 1)	26.66103C(182, 1)	24.81336C(182, 1)	25.59868C(233, 1)
50.0 /	28.41567C(185, 1)	36.39185C(185, 1)	32.88241C(185, 1)	29.92775C(185, 1)	28.76608C(282, 1)
40.0 /	26.04749 (45, 1)	32.77403 (45, 1)	37.56468 (45, 1)	35.30761C(282, 1)	34.73389C(282, 1)
30.0 /	22.92579 (62, 1)	27.70541 (46, 1)	28.60871C(276, 1)	27.24231C(157, 1)	26.13010 (46, 1)
20.0 /	26.75021 (45, 1)	32.28717 (45, 1)	38.41721C(157, 1)	39.00686C(157, 1)	37.15832C(157, 1)
10.0 /	21.46081C(174, 1)	25.02499C(313, 1)	29.09677 (208, 1)	28.87694C(174, 1)	27.26486C(174, 1)

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 80.22511 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 700.0	900.0	1200.0	1600.0	2200.0
360.0 /	30.47938C(313, 1)	27.49065C(313, 1)	23.98783C(313, 1)	20.27112C(313, 1)	16.15013C(313, 1)
350.0 /	27.22542C(193, 1)	23.59395 (102, 1)	19.48962 (102, 1)	15.45043 (102, 1)	12.01005 (91, 1)
340.0 /	23.05235 (123, 1)	20.98058C(295, 1)	18.32960C(295, 1)	15.33067C(295, 1)	11.22163C(97, 1)
330.0 /	28.18922 (123, 1)	25.71308 (123, 1)	20.57434 (101, 1)	16.68902 (113, 1)	13.19694 (113, 1)
320.0 /	35.44966 (325, 1)	31.55824 (294, 1)	26.66323 (294, 1)	21.74357 (325, 1)	16.38957 (325, 1)
310.0 /	37.88991 (294, 1)	33.93097 (294, 1)	29.00858 (294, 1)	24.00941 (303, 1)	18.31474 (303, 1)
300.0 /	40.74211 (345, 1)	36.82488 (76, 1)	31.37775 (76, 1)	25.72621 (76, 1)	19.69744 (76, 1)
290.0 /	28.08922C(129, 1)	24.16172C(129, 1)	19.69131C(129, 1)	17.20311C(51, 1)	14.76467C(51, 1)
280.0 /	30.08001 (204, 1)	25.98400 (204, 1)	21.26901 (204, 1)	17.81907C(25, 1)	15.97841C(25, 1)
270.0 /	26.85730 (262, 1)	24.31302 (262, 1)	20.50971 (260, 1)	17.01498 (262, 1)	13.83505 (260, 1)
260.0 /	23.68021 (262, 1)	21.44018 (262, 1)	18.44193 (262, 1)	15.15448 (262, 1)	11.53010 (262, 1)
250.0 /	32.90168 (203, 1)	29.12980C(362, 1)	27.04351C(362, 1)	23.79992C(362, 1)	18.70274 (36, 1)
240.0 /	27.45594C(120, 1)	24.30282C(362, 1)	20.66829C(362, 1)	16.76915C(362, 1)	12.71427C(362, 1)
230.0 /	26.43006C(228, 1)	22.62480C(337, 1)	20.10982C(337, 1)	17.10489C(337, 1)	13.78011C(337, 1)
220.0 /	36.97562C(342, 1)	31.99682C(342, 1)	25.96218C(342, 1)	20.74688C(136, 1)	15.86954C(136, 1)
210.0 /	24.28700 (48, 1)	23.09534 (48, 1)	21.15978 (48, 1)	18.58783C(257, 1)	14.45000C(257, 1)
200.0 /	34.74748 (348, 1)	31.62616 (348, 1)	27.37113 (348, 1)	22.64247 (348, 1)	17.37775 (348, 1)
190.0 /	26.24567C(47, 1)	23.43173C(47, 1)	19.89461C(47, 1)	16.51327C(12, 1)	14.22720C(12, 1)
180.0 /	48.65646 (8, 1)	42.26007 (8, 1)	35.57390 (8, 1)	29.26138 (8, 1)	22.99772 (315, 1)
170.0 /	27.18335C(31, 1)	23.42922C(31, 1)	19.26915C(31, 1)	15.31292C(31, 1)	11.40297C(31, 1)
160.0 /	27.52601 (125, 1)	24.64185 (125, 1)	21.34119 (125, 1)	17.19150C(31, 1)	13.65392C(277, 1)
150.0 /	31.67629C(2, 1)	26.60468C(2, 1)	21.07418C(2, 1)	16.15025C(2, 1)	11.63548C(2, 1)
140.0 /	23.56555 (27, 1)	20.66274 (27, 1)	17.90728C(364, 1)	14.18684 (27, 1)	10.97877 (27, 1)
130.0 /	26.87630 (56, 1)	22.47153 (56, 1)	18.69390C(327, 1)	16.15529C(327, 1)	12.98543C(327, 1)
120.0 /	28.48949 (56, 1)	23.87798 (56, 1)	19.17578 (56, 1)	15.03724 (56, 1)	11.20206 (56, 1)
110.0 /	21.43139C(274, 1)	18.12351C(274, 1)	13.51313C(274, 1)	9.30467C(274, 1)	6.48562C(213, 1)
100.0 /	19.92071C(213, 1)	16.86721C(213, 1)	14.59989C(280, 1)	11.46878C(280, 1)	8.45916C(220, 1)
90.0 /	23.35063 (116, 1)	19.79068 (116, 1)	15.99238 (116, 1)	12.78597 (116, 1)	9.91738 (116, 1)
80.0 /	21.23123 (211, 1)	17.38094 (358, 1)	14.61971 (358, 1)	11.91601 (358, 1)	9.14857 (358, 1)
70.0 /	21.61379C(279, 1)	17.98803C(279, 1)	14.22934C(279, 1)	11.06501C(173, 1)	8.58377C(173, 1)
60.0 /	23.81426C(43, 1)	21.16167C(43, 1)	17.60181C(43, 1)	13.23480C(233, 1)	9.07458C(233, 1)
50.0 /	25.47780C(282, 1)	21.40618C(282, 1)	16.58609C(185, 1)	12.85021C(185, 1)	9.72287C(39, 1)
40.0 /	30.52723 (98, 1)	26.92005 (98, 1)	22.57373 (98, 1)	18.20229 (98, 1)	13.68196 (98, 1)
30.0 /	21.31908C(156, 1)	17.03266C(157, 1)	12.92852C(157, 1)	10.38183 (45, 1)	7.76759 (45, 1)
20.0 /	31.17951C(157, 1)	25.67161C(157, 1)	19.57401C(157, 1)	14.34685C(157, 1)	9.80535C(157, 1)
10.0 /	22.13462 (208, 1)	18.01609 (208, 1)	14.18651C(174, 1)	12.11977C(156, 1)	9.96242C(72, 1)

Table 12.6 WIDGET AT WIDGET (SELECTED PORTIONS) (cont.)

MAX 50
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 ***

* 50 MAXIMUM 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *

RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	95.34115	1	8	200.0	180.0	26	56.98452	1	133	300.0	180.0
2	84.74927	1	8	300.0	180.0	27	56.63356	1	294	300.0	320.0
3	80.22511	1	351	200.0	180.0	28	56.62914	1	306	300.0	180.0
4	77.85375	1	8	100.0	180.0	29	56.12524	1	303	100.0	310.0
5	72.99441	1	351	300.0	180.0	30	56.09599	1	14	300.0	150.0
6	67.88498	1	303	200.0	310.0	31	55.63268	1	77	100.0	300.0
7	67.38881	1	77	200.0	300.0	32	55.47338	1	294	200.0	320.0
8	66.85857	1	8	400.0	180.0	33	55.44769	1	162	400.0	200.0
9	66.56972	1	49	300.0	180.0	34	55.23696	1	36	200.0	250.0
10	66.14200	1	351	100.0	180.0	35	54.19638	1	133	200.0	180.0
11	65.89507	1	303	300.0	310.0	36	54.06615	1	294	300.0	310.0
12	65.88039	1	162	200.0	200.0	37	53.59501	1	303	400.0	310.0
13	65.52672	1	306	200.0	180.0	38	53.08913	1	77	400.0	300.0
14	65.21028	1	162	300.0	200.0	39	53.03542	1	162	100.0	200.0
15	65.02948	1	77	300.0	300.0	40	52.25337	1	76	400.0	300.0
16	61.34805	1	49	200.0	180.0	41	52.04696	1	56	300.0	120.0
17	60.98296	1	76	300.0	300.0	42	51.52951	1	133	400.0	180.0
18	60.35018	1	49	400.0	180.0	43	51.52756	1	36	400.0	250.0
19	59.16299	1	56	200.0	120.0	44	51.40861	1	56	100.0	120.0
20	59.14424	1	76	200.0	300.0	45	51.40219	1	49	700.0	180.0
21	58.18978	1	36	300.0	250.0	46	51.33950	1	306	100.0	180.0
22	58.17288	1	14	200.0	150.0	47	50.61587	1	102	300.0	360.0
23	57.91161	1	351	400.0	180.0	48	50.54769C	1	2	200.0	150.0
24	57.48824	1	8	500.0	180.0	49	50.52331C	1	136	400.0	220.0
25	57.05454	1	49	500.0	180.0	50	50.51580	1	27	300.0	130.0

Table 12.7 AJAX AT WIDGET (SELECTED PORTIONS)

*** LESSON 12 AREA NEAR PROJECT - 1979 AJAX ALONE ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
101	0	0	0	.30000E+02	.0	.0	.0	18.20	394.00	18.50	1.21	.00	.00	.00

HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 AJAX ALONE ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 80.41373 AND OCCURRED AT (4800.0, 80.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 4800.0
160.0 /	62.43321 (143, 8)
150.0 /	61.97869C(277, 7)
140.0 /	56.61130 (144, 1)
130.0 /	65.96000 (364, 7)
120.0 /	64.54465 (56, 7)
110.0 /	70.51854 (21, 2)
100.0 /	72.23076 (359, 2)
90.0 /	72.90567 (155, 7)
80.0 /	80.41373 (187, 1)
70.0 /	53.06092C(182, 2)

Table 12.7 AJAX AT WIDGET (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 AJAX ALONE ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 22.16634 AND OCCURRED AT (4800.0, 100.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 4800.0
160.0 /	15.65578 (125, 1)
150.0 /	15.42436C(277, 1)
140.0 /	13.64693 (27, 1)
130.0 /	15.40837 (27, 1)
120.0 /	17.42754C(327, 1)
110.0 /	17.87759C(21, 1)
100.0 /	22.16634C(359, 1)
90.0 /	16.37423C(223, 1)
80.0 /	15.91765C(66, 1)
70.0 /	12.06352C(329, 1)

2ND HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 AJAX ALONE ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 15.38841 AND OCCURRED AT (4800.0, 150.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 4800.0
160.0 /	14.61581C(277, 1)
150.0 /	15.38841C(272, 1)
140.0 /	12.98921 (197, 1)
130.0 /	13.34026C(327, 1)
120.0 /	14.12953 (56, 1)
110.0 /	6.99342C(215, 1)
100.0 /	9.19216C(185, 1)
90.0 /	14.16795 (116, 1)
80.0 /	15.22147C(213, 1)
70.0 /	10.57824C(279, 1)

Table 12.7 AJAX AT WIDGET (SELECTED PORTIONS) (cont.)

MAX 50
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 AJAX ALONE ***

* 50 MAXIMUM 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM ALL SOURCES *

RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	22.16634C	1	359	4800.0	100.0	26	12.06352C	1	329	4800.0	70.0
2	17.87759C	1	21	4800.0	110.0	27	12.05211C	1	187	4800.0	80.0
3	17.42754C	1	327	4800.0	120.0	28	12.04644C	1	214	4800.0	80.0
4	16.37423C	1	223	4800.0	90.0	29	12.03783C	1	2	4800.0	150.0
5	15.91765C	1	66	4800.0	80.0	30	12.03759C	1	31	4800.0	160.0
6	15.65578	1	125	4800.0	160.0	31	11.71803C	1	327	4800.0	150.0
7	15.42436C	1	277	4800.0	150.0	32	11.60446C	1	364	4800.0	140.0
8	15.40837	1	27	4800.0	130.0	33	11.60017C	1	84	4800.0	120.0
9	15.38841C	1	272	4800.0	150.0	34	10.91692	1	358	4800.0	80.0
10	15.22147C	1	213	4800.0	80.0	35	10.86954	1	365	4800.0	130.0
11	14.61581C	1	277	4800.0	160.0	36	10.57824C	1	279	4800.0	70.0
12	14.23704	1	14	4800.0	150.0	37	10.55435C	1	64	4800.0	140.0
13	14.16795	1	116	4800.0	90.0	38	10.54922	1	358	4800.0	90.0
14	14.12953	1	56	4800.0	120.0	39	10.53467C	1	264	4800.0	70.0
15	13.73058C	1	359	4800.0	90.0	40	10.46085	1	116	4800.0	80.0
16	13.64693	1	27	4800.0	140.0	41	10.44515C	1	21	4800.0	120.0
17	13.48767	1	326	4800.0	160.0	42	10.44338	1	365	4800.0	140.0
18	13.34026C	1	327	4800.0	130.0	43	10.32530	1	23	4800.0	90.0
19	12.98921	1	197	4800.0	140.0	44	10.18399C	1	181	4800.0	90.0
20	12.93152C	1	24	4800.0	120.0	45	10.17737C	1	155	4800.0	90.0
21	12.87169C	1	64	4800.0	150.0	46	10.17236	1	63	4800.0	150.0
22	12.78146C	1	57	4800.0	140.0	47	10.04886C	1	24	4800.0	130.0
23	12.52597C	1	161	4800.0	150.0	48	10.04097	1	14	4800.0	160.0
24	12.24352C	1	181	4800.0	80.0	49	10.04010	1	83	4800.0	120.0
25	12.17934C	1	264	4800.0	160.0	50	10.03779C	1	271	4800.0	150.0

Table 12.8 COMBINED ANALYSIS (SELECTED PORTIONS)

*** LESSON 12 AREA NEAR PROJECT - 1979 WIDGET PLUS AJAX ***
*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
101	0	0	0	.30000E+02	-4500.0	1900.0	.0	18.20	394.00	18.50	1.21	.00	.00	.00
1001	0	0	0	.16000E+02	.0	.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

MAX 50
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR PROJECT - 1979 WIDGET PLUS AJAX ***

* 50 MAXIMUM 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM SOURCES: 101,

RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	18.09686C	1	21	300.0	20.0	26	15.86742C	1	21	400.0	80.0
2	17.89197C	1	21	300.0	30.0	27	15.60512C	1	213	500.0	40.0
3	17.80996C	1	21	400.0	20.0	28	15.55381C	1	21	200.0	60.0
4	17.66000C	1	21	400.0	30.0	29	15.15665C	1	21	300.0	80.0
5	17.62995C	1	21	300.0	40.0	30	15.05269C	1	21	500.0	90.0
6	17.59261C	1	21	400.0	40.0	31	14.93862C	1	21	200.0	70.0
7	17.50699C	1	21	400.0	50.0	32	14.60998C	1	21	400.0	90.0
8	17.27182C	1	21	300.0	50.0	33	14.58373C	1	21	100.0	20.0
9	17.27105C	1	21	400.0	60.0	34	14.50736C	1	21	100.0	30.0
10	16.99996C	1	21	500.0	60.0	35	14.35620C	1	21	100.0	40.0
11	16.93021C	1	21	500.0	70.0	36	14.23166	1	56	500.0	200.0
12	16.87219C	1	21	200.0	20.0	37	14.21854C	1	21	200.0	80.0
13	16.76592C	1	21	300.0	60.0	38	14.13518C	1	21	100.0	50.0
14	16.75375C	1	21	400.0	70.0	39	14.13352C	1	213	500.0	50.0
15	16.71472C	1	21	500.0	50.0	40	14.05849C	1	21	300.0	90.0
16	16.71015C	1	213	500.0	20.0	41	13.85253	1	56	500.0	190.0
17	16.70919C	1	21	200.0	30.0	42	13.85094C	1	21	100.0	60.0
18	16.43712C	1	21	200.0	40.0	43	13.82117C	1	327	500.0	200.0
19	16.35326C	1	213	500.0	30.0	44	13.59243C	1	213	400.0	20.0
20	16.31916C	1	21	500.0	40.0	45	13.51224C	1	21	100.0	70.0
21	16.30422C	1	21	500.0	80.0	46	13.45108	1	56	400.0	200.0
22	16.06704C	1	21	300.0	70.0	47	13.41829C	1	21	200.0	90.0
23	16.05341C	1	21	200.0	50.0	48	13.33330	1	56	500.0	180.0
24	16.03366C	1	21	500.0	30.0	49	13.30464C	1	21	500.0	100.0
25	16.02028C	1	21	500.0	20.0	50	13.13021C	1	21	100.0	80.0

HIGH
24-HR
SGROUP# 2

*** LESSON 12 AREA NEAR PROJECT - 1979 WIDGET PLUS AJAX ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 95.34115 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
200.0 /	53.03542 (162, 1)	65.88039 (162, 1)	65.21028 (162, 1)	55.44769 (162, 1)	49.81194 (162, 1)
190.0 /	33.83208 (162, 1)	38.69656 (162, 1)	36.61901 (162, 1)	31.84596C(198, 1)	32.70756C(198, 1)
180.0 /	77.85375 (8, 1)	95.34115 (8, 1)	84.74927 (8, 1)	66.85857 (8, 1)	57.48824 (8, 1)
170.0 /	38.54738C(31, 1)	45.56001C(31, 1)	43.78163C(31, 1)	36.44895C(31, 1)	32.22299C(31, 1)
160.0 /	34.84975C(31, 1)	42.34593C(31, 1)	43.48237C(31, 1)	38.31170C(31, 1)	35.25256C(31, 1)
150.0 /	48.58414 (14, 1)	58.17288 (14, 1)	56.09599 (14, 1)	47.99258 (14, 1)	43.15688 (14, 1)
140.0 /	34.41357 (27, 1)	41.64699 (27, 1)	38.62329 (27, 1)	31.45505 (27, 1)	28.22810C(57, 1)
130.0 /	43.16475 (56, 1)	49.31375 (56, 1)	50.51580 (27, 1)	46.19908 (27, 1)	43.48473 (27, 1)
120.0 /	51.40861 (56, 1)	59.16299 (56, 1)	52.04696 (56, 1)	41.56588 (56, 1)	35.87289 (56, 1)
110.0 /	26.46573 (56, 1)	35.29128C(21, 1)	38.62938C(21, 1)	33.83438C(21, 1)	31.12664C(21, 1)
100.0 /	28.58461C(359, 1)	38.65036C(359, 1)	32.60827C(359, 1)	26.12325C(359, 1)	23.39724C(359, 1)
90.0 /	23.84633C(223, 1)	31.66055C(223, 1)	43.02193C(223, 1)	45.34686C(223, 1)	44.16941C(223, 1)
80.0 /	28.95852 (358, 1)	35.31816 (358, 1)	35.13761C(66, 1)	34.17128C(66, 1)	33.21739C(66, 1)
70.0 /	25.48390C(66, 1)	30.49862C(66, 1)	30.13879C(279, 1)	28.12559C(279, 1)	26.30898 (211, 1)
60.0 /	21.77389C(279, 1)	26.49654C(180, 1)	29.54142C(279, 1)	28.78941C(279, 1)	26.74720C(279, 1)
50.0 /	32.23009C(279, 1)	40.18907C(279, 1)	41.61807C(279, 1)	36.97868C(279, 1)	34.36966C(279, 1)
40.0 /	32.03513 (98, 1)	39.56348 (98, 1)	42.85693 (98, 1)	37.90704 (98, 1)	35.02836 (98, 1)
30.0 /	27.03703C(276, 1)	32.43968C(276, 1)	31.11551 (46, 1)	27.88272 (46, 1)	26.51622C(156, 1)
20.0 /	32.92199C(72, 1)	41.01298C(72, 1)	45.03654C(72, 1)	40.04709C(72, 1)	37.24935C(72, 1)

Table 12.8 COMBINED ANALYSIS (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 2

*** LESSON 12 AREA NEAR PROJECT - 1979 WIDGET PLUS AJAX ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 80.22511 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
200.0 /	30.22478 (348, 1)	38.79140C(267, 1)	43.72821 (348, 1)	39.93879 (348, 1)	38.07779 (348, 1)
190.0 /	29.46811 (296, 1)	34.97293 (296, 1)	35.66379C(47, 1)	31.70959C(47, 1)	29.60460C(47, 1)
180.0 /	66.14200 (351, 1)	80.22511 (351, 1)	72.99441 (351, 1)	60.35018 (49, 1)	57.05454 (49, 1)
170.0 /	36.93425 (8, 1)	44.98022 (305, 1)	41.73169 (305, 1)	35.10213 (8, 1)	31.57860 (8, 1)
160.0 /	31.17367 (14, 1)	37.70636 (14, 1)	37.95972 (14, 1)	32.52751 (14, 1)	31.08338 (125, 1)
150.0 /	42.82147C(2, 1)	50.54769C(2, 1)	48.77610C(2, 1)	42.60183C(2, 1)	38.37199C(2, 1)
140.0 /	28.37899C(13, 1)	33.98154C(13, 1)	34.14220C(13, 1)	29.58520C(13, 1)	27.36204 (27, 1)
130.0 /	38.32567 (27, 1)	46.97242 (27, 1)	45.94014 (56, 1)	38.11386 (56, 1)	33.36163 (56, 1)
120.0 /	31.14423C(24, 1)	37.05996C(24, 1)	36.68393C(24, 1)	32.28971C(327, 1)	31.53027C(327, 1)
110.0 /	25.53197C(21, 1)	29.56071 (56, 1)	25.61517 (56, 1)	22.49557C(143, 1)	22.50462C(274, 1)
100.0 /	24.43561C(84, 1)	28.24805C(84, 1)	22.83984C(84, 1)	21.61797C(173, 1)	22.03399C(173, 1)
90.0 /	23.37794 (358, 1)	28.98421 (358, 1)	27.17973 (358, 1)	27.64779 (116, 1)	26.98429 (116, 1)
80.0 /	24.53438C(181, 1)	31.17957C(181, 1)	33.23171 (358, 1)	26.51686 (358, 1)	25.99319 (211, 1)
70.0 /	22.70425C(274, 1)	27.41786C(274, 1)	27.18776C(66, 1)	25.83517 (211, 1)	26.05067C(279, 1)
60.0 /	21.58934C(66, 1)	26.18556C(66, 1)	26.66103C(182, 1)	24.81336C(182, 1)	25.59868C(233, 1)
50.0 /	28.41567C(185, 1)	36.39185C(185, 1)	32.88241C(185, 1)	29.92775C(185, 1)	28.76608C(282, 1)
40.0 /	26.04749 (45, 1)	32.77403 (45, 1)	37.56468 (45, 1)	35.30761C(282, 1)	34.73389C(282, 1)
30.0 /	22.92579 (62, 1)	27.70541 (46, 1)	28.60871C(276, 1)	27.24231C(157, 1)	26.13010 (46, 1)
20.0 /	26.75021 (45, 1)	32.28717 (45, 1)	38.41721C(157, 1)	39.00686C(157, 1)	37.15832C(157, 1)

Table 12.8 COMBINED ANALYSIS (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 3

*** LESSON 12 AREA NEAR PROJECT - 1979 WIDGET PLUS AJAX ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 95.34115 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
200.0 /	53.03542 (162, 1)	65.88039 (162, 1)	65.21028 (162, 1)	55.44769 (162, 1)	49.81194 (162, 1)
190.0 /	33.83208 (162, 1)	38.69656 (162, 1)	38.70212C(47, 1)	34.01267C(47, 1)	32.70785C(198, 1)
180.0 /	77.85375 (8, 1)	95.34115 (8, 1)	84.74927 (8, 1)	66.85857 (8, 1)	57.48824 (8, 1)
170.0 /	38.55254C(31, 1)	45.56266C(31, 1)	43.78304C(31, 1)	36.44987C(31, 1)	32.22392C(31, 1)
160.0 /	34.85532C(31, 1)	42.34901C(31, 1)	43.48411C(31, 1)	38.31276C(31, 1)	35.25338C(31, 1)
150.0 /	48.58414 (14, 1)	58.17288 (14, 1)	56.09599 (14, 1)	47.99258 (14, 1)	43.15688 (14, 1)
140.0 /	34.89530 (27, 1)	42.14756 (27, 1)	39.74181 (83, 1)	36.61042C(57, 1)	35.25795C(57, 1)
130.0 /	52.59430 (56, 1)	58.85034 (56, 1)	55.55848 (56, 1)	47.79176 (56, 1)	43.96745 (27, 1)
120.0 /	60.61668 (56, 1)	68.28071 (56, 1)	61.06950 (56, 1)	50.48957 (56, 1)	44.69497 (56, 1)
110.0 /	37.39945C(21, 1)	47.03249C(21, 1)	50.24693C(21, 1)	45.33071C(21, 1)	42.50411C(21, 1)
100.0 /	34.41994C(359, 1)	43.84346C(359, 1)	37.20851C(359, 1)	30.18228C(359, 1)	26.96697C(359, 1)
90.0 /	28.24509 (358, 1)	33.94394 (358, 1)	43.98159C(223, 1)	46.72967C(223, 1)	46.12255C(223, 1)
80.0 /	33.92136 (358, 1)	40.41965 (358, 1)	41.46639C(66, 1)	40.32655C(66, 1)	39.05870C(66, 1)
70.0 /	31.75549C(66, 1)	36.95562C(66, 1)	33.53497C(66, 1)	28.12559C(279, 1)	27.59412 (211, 1)
60.0 /	27.95673C(66, 1)	32.71853C(66, 1)	32.04036C(182, 1)	29.69819C(182, 1)	27.53814C(182, 1)
50.0 /	32.23009C(279, 1)	40.18907C(279, 1)	41.61807C(279, 1)	36.97868C(279, 1)	38.62981C(213, 1)
40.0 /	32.03513 (98, 1)	39.56348 (98, 1)	42.85693 (98, 1)	37.90704 (98, 1)	35.02836 (98, 1)
30.0 /	27.03703C(276, 1)	32.43968C(276, 1)	31.11551 (46, 1)	27.88272 (46, 1)	26.51622C(156, 1)
20.0 /	32.92199C(72, 1)	41.01298C(72, 1)	45.03654C(72, 1)	40.04709C(72, 1)	37.24935C(72, 1)

Table 12.8 COMBINED ANALYSIS (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 3

*** LESSON 12 AREA NEAR PROJECT - 1979 WIDGET PLUS AJAX ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 80.22511 AND OCCURRED AT (200.0, 180.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 100.0	200.0	300.0	400.0	500.0
200.0 /	30.22478 (348, 1)	38.79140C(267, 1)	43.72821 (348, 1)	39.93879 (348, 1)	38.07779 (348, 1)
190.0 /	29.46811 (296, 1)	34.97293 (296, 1)	36.61901 (162, 1)	31.84597C(198, 1)	31.17797C(47, 1)
180.0 /	66.14200 (351, 1)	80.22511 (351, 1)	72.99441 (351, 1)	60.35018 (49, 1)	57.05454 (49, 1)
170.0 /	36.93425 (8, 1)	44.98022 (305, 1)	41.73169 (305, 1)	35.10213 (8, 1)	31.57860 (8, 1)
160.0 /	31.17367 (14, 1)	37.70636 (14, 1)	37.95972 (14, 1)	35.39812 (125, 1)	34.63100 (125, 1)
150.0 /	42.82147C(2, 1)	50.54769C(2, 1)	48.77610C(2, 1)	42.60183C(2, 1)	38.37199C(2, 1)
140.0 /	33.25615 (83, 1)	39.14604 (83, 1)	39.13935 (27, 1)	35.74609 (83, 1)	33.66568 (83, 1)
130.0 /	38.79298 (27, 1)	47.44601 (27, 1)	50.99389 (27, 1)	46.68012 (27, 1)	43.07880 (56, 1)
120.0 /	36.95451C(21, 1)	41.44961 (83, 1)	41.01938 (83, 1)	35.75436 (83, 1)	33.56634C(327, 1)
110.0 /	35.45312 (56, 1)	38.25937 (56, 1)	34.04010 (56, 1)	28.00469 (56, 1)	24.90466C(274, 1)
100.0 /	28.60513C(84, 1)	32.40170C(84, 1)	27.01387C(84, 1)	22.67661C(213, 1)	23.98906C(213, 1)
90.0 /	26.75393C(359, 1)	32.46941C(359, 1)	32.17742 (358, 1)	30.28766 (116, 1)	29.85987 (116, 1)
80.0 /	29.99363C(181, 1)	36.28293C(181, 1)	38.39405 (358, 1)	31.70746 (358, 1)	28.50305 (358, 1)
70.0 /	25.55502C(274, 1)	30.29034C(274, 1)	30.13879C(279, 1)	27.19970C(226, 1)	26.21250C(226, 1)
60.0 /	24.70445C(182, 1)	30.98180C(182, 1)	29.54142C(279, 1)	28.78941C(279, 1)	26.74720C(279, 1)
50.0 /	30.07541C(185, 1)	38.53734C(185, 1)	35.67329C(185, 1)	36.73539C(213, 1)	34.36966C(279, 1)
40.0 /	26.04749 (45, 1)	32.77403 (45, 1)	37.56468 (45, 1)	35.30761C(282, 1)	34.73389C(282, 1)
30.0 /	22.92580 (62, 1)	27.70541 (46, 1)	28.60871C(276, 1)	27.24231C(157, 1)	26.13010 (46, 1)
20.0 /	26.75021 (45, 1)	32.28717 (45, 1)	38.41721C(157, 1)	39.00686C(157, 1)	37.15832C(157, 1)

Table 12.10 AJAX AT AJAX ALONE (SELECTED PORTIONS) (cont.)

2ND HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 254.10150 AND OCCURRED AT (600.0, 340.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	50.34964 (183, 5)	142.18500 (139, 4)	173.72070 (157, 5)	170.32080 (157, 5)	184.87790 (45, 5)
10.0 /	68.07846 (139, 4)	185.96920 (183, 5)	204.81070 (183, 5)	187.13940 (276, 5)	171.91430 (276, 5)
360.0 /	61.42494 (183, 5)	167.23400 (129, 4)	198.84030 (89, 5)	230.42780 (158, 6)	214.47070 (91, 6)
350.0 /	56.89342 (168, 4)	151.38910 (153, 4)	190.26480 (158, 4)	178.38170 (207, 4)	181.97060 (207, 4)
340.0 /	48.94431 (146, 5)	154.25300 (97, 5)	228.24740 (97, 5)	254.10150 (97, 5)	203.97910 (170, 5)
330.0 /	46.54458 (130, 5)	132.11150 (170, 5)	164.62790 (97, 4)	155.63780 (101, 3)	146.99720 (101, 1)
320.0 /	37.87858 (130, 5)	126.18770 (58, 4)	175.24650 (58, 4)	170.33670 (207, 3)	176.75600 (207, 3)
310.0 /	53.88545 (138, 5)	167.02410 (159, 4)	212.64710 (107, 4)	198.66420 (107, 4)	193.02690 (205, 6)
300.0 /	49.79251 (130, 5)	134.47660 (130, 5)	182.64800 (261, 4)	174.83220 (106, 5)	162.37780 (76, 8)
290.0 /	58.01932 (160, 4)	164.85100 (159, 4)	175.13710 (241, 4)	163.87730 (108, 4)	158.14400 (76, 6)
280.0 /	47.61434 (243, 4)	151.74710 (243, 4)	193.10830 (160, 5)	179.09690 (165, 6)	153.63360 (165, 6)
270.0 /	49.98119 (243, 4)	165.06130 (160, 5)	204.83250 (243, 4)	207.69200 (243, 4)	176.58950 (243, 4)
260.0 /	44.41006 (160, 4)	149.86110 (135, 5)	184.50390 (165, 4)	169.94690 (120, 5)	173.39490 (253, 3)
250.0 /	46.13591 (165, 4)	138.74740 (135, 5)	186.27960 (135, 5)	195.17390 (203, 5)	173.11950 (203, 6)
240.0 /	50.91697 (228, 4)	158.52470 (228, 4)	191.69960 (228, 4)	182.89110 (203, 5)	167.00970 (308, 5)
230.0 /	55.01468 (136, 4)	161.67660 (164, 4)	193.35770 (164, 4)	190.27420 (253, 5)	158.68780 (255, 3)
220.0 /	50.59608 (136, 5)	179.55450 (136, 5)	232.38820 (136, 5)	215.98740 (265, 4)	173.68470 (136, 6)
210.0 /	54.33493 (198, 4)	177.68180 (136, 5)	210.16640 (198, 5)	198.68190 (163, 5)	153.66880 (163, 5)
200.0 /	55.49731 (198, 5)	169.43170 (198, 5)	199.85460 (218, 5)	171.36670 (198, 5)	172.81910 (162, 6)

Table 12.10 AJAX AT AJAX ALONE (SELECTED PORTIONS)

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
101	0	0	0	.30000E+02	.0	.0	.0	18.20	394.00	18.50	1.21	.00	.00	.00

HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 267.65390 AND OCCURRED AT (400.0, 340.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	56.00471 (156, 4)	152.73190 (156, 4)	178.48410 (170, 4)	170.89230 (85, 6)	192.58090 (85, 6)
10.0 /	70.92096 (183, 5)	206.68730 (139, 4)	237.18490 (139, 4)	198.01880 (126, 5)	183.39020 (208, 6)
360.0 /	74.61827 (221, 5)	170.01240 (139, 4)	202.06830 (208, 5)	231.11840 (89, 5)	231.14370 (158, 6)
350.0 /	74.61697 (221, 5)	176.87630 (140, 4)	246.52650 (140, 4)	240.02140 (140, 4)	185.98420 (140, 4)
340.0 /	63.67800 (170, 5)	202.88840 (170, 5)	267.65390 (170, 5)	259.18870 (170, 5)	220.39130 (97, 5)
330.0 /	47.65584 (170, 5)	135.26090 (107, 5)	181.33870 (107, 5)	169.61030 (107, 5)	160.08580 (101, 3)
320.0 /	39.56117 (138, 4)	141.14910 (138, 4)	177.30620 (138, 4)	170.55110 (58, 4)	180.13540 (122, 6)
310.0 /	63.09909 (159, 4)	186.67790 (96, 5)	244.75310 (96, 5)	224.06940 (96, 5)	201.43330 (346, 4)
300.0 /	101.41370 (159, 4)	215.95960 (159, 4)	219.74840 (159, 4)	214.12420 (261, 4)	201.87280 (261, 4)
290.0 /	82.46130 (159, 4)	187.70340 (106, 4)	240.63680 (106, 4)	214.91260 (106, 4)	161.68550 (106, 4)
280.0 /	88.00731 (160, 4)	217.10970 (160, 4)	232.78640 (160, 4)	195.07770 (160, 5)	171.80980 (288, 6)
270.0 /	68.98858 (160, 4)	173.08020 (160, 4)	242.77840 (160, 5)	253.27710 (160, 5)	197.87580 (160, 5)
260.0 /	46.81931 (165, 4)	151.87310 (165, 4)	216.11100 (135, 5)	224.88140 (135, 5)	178.60400 (135, 5)
250.0 /	81.23583C(152, 4)	150.29250 (165, 4)	194.70180 (203, 5)	200.77630 (120, 4)	178.43740 (120, 4)
240.0 /	73.73926C(152, 4)	167.64160 (219, 5)	210.36840 (219, 5)	183.12240 (219, 5)	188.69980 (204, 1)
230.0 /	58.82997 (228, 4)	167.99730 (228, 4)	196.55020 (228, 4)	198.51080 (257, 4)	159.99770 (257, 4)
220.0 /	54.99479 (265, 4)	182.69440 (265, 4)	234.64340 (265, 4)	230.12630 (255, 3)	226.64860 (255, 3)
210.0 /	61.75127 (198, 5)	179.85950 (198, 5)	229.44810 (136, 5)	208.48730 (136, 5)	160.72590 (336, 5)
200.0 /	63.43410 (218, 5)	175.39970 (218, 5)	203.82510 (198, 5)	181.62210 (268, 3)	205.30670 (255, 5)

Table 12.9 AJAX SCREENING ANALYSIS (cont.)

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
4	.50	2.0550E+01	18.850	377.3(2)	.55	2.3314E+01	16.260	346.4(2)
4	.80	3.9100E+01	9.392	242.6(2)	.88	4.3739E+01	8.246	223.4(2)
4	1.00	5.1515E+01	6.790	197.7	1.09	5.7402E+01	5.976	182.3
4	1.50	8.2694E+01	3.853	137.9	1.64	9.1297E+01	3.414	127.6
4	2.00	1.1187E+02	2.761	108.0	2.19	1.2171E+02	2.478	100.3
4	2.50	1.3721E+02	2.119	90.0	2.73	1.4819E+02	1.912	83.8
4	3.00	1.5986E+02	1.724	78.0	3.28	1.7148E+02	1.562	72.9
4	4.00	1.9759E+02	1.269	63.1	4.38	2.0944E+02	1.160	59.2
4	5.00	2.2665E+02	1.019	54.1	5.47	2.3696E+02	1.000	51.0
4	7.00	2.5438E+02	.874	43.8	7.66	2.5890E+02	.823	41.6
4	10.00	2.6624E+02	.699	36.2	10.94	2.6655E+02	.665	34.6
4	12.00	2.6571E+02	.633	33.2	13.13	2.6775E+02	.599	31.7
4	15.00	2.7136E+02	.552	29.5	16.41	2.7238E+02	.523	28.2
4	20.00	2.7063E+02	.470	25.8	21.88	2.6804E+02	.449	24.8

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
5	2.00	1.6922E+02	3.202	78.9	2.47	1.5680E+02	2.940	74.8
5	2.50	1.5602E+02	2.924	74.5	3.08	1.4422E+02	2.687	70.7
5	3.00	1.4572E+02	2.717	71.2	3.70	1.3443E+02	2.502	67.6
5	4.00	1.3037E+02	2.427	66.4	4.93	1.1986E+02	2.240	63.1
5	5.00	1.1920E+02	2.229	62.9	6.17	1.0930E+02	2.061	59.9

STABILITY	****WINDS CONSTANT WITH HEIGHT**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)**** WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
6	2.00	1.5989E+02	5.359	68.6	2.78	1.4381E+02	4.598	63.3
6	2.50	1.4892E+02	4.830	64.9	3.48	1.3332E+02	4.160	60.1
6	3.00	1.4019E+02	4.446	62.2	4.17	1.2501E+02	3.839	57.6
6	4.00	1.2689E+02	3.910	58.2	5.56	1.1243E+02	3.395	54.0
6	5.00	1.1700E+02	3.551	55.3	6.95	1.0314E+02	3.092	51.4

(1) THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.

(2) THE PLUME IS CALCULATED TO BE AT A HEIGHT WHERE CARE SHOULD BE USED IN INTERPRETING THE COMPUTATION.

(3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 100 KILOMETERS FROM THE SOURCE.

Table 12.9 AJAX SCREENING ANALYSIS

PTPLU-2.0 (DATED 86196)

>>>INPUT PARAMETERS<<<

*** TITLE***

OPTIONS
IF = 1, USE OPTION
IF = 0, IGNORE OPTION
IOPT(1) = 0 (GRAD PLUME RISE)
IOPT(2) = 1 (STACK DOWNWASH)
IOPT(3) = 1 (BUOY. INDUCED DISP.)
IDFLT = 1 (1 = USE DEFAULT, 0 = NOT USE DEFAULT)
MUOR = 2 (1 = URBAN, 2 = RURAL)

METEOROLOGY
AMBIENT AIR TEMPERATURE = 293.00 (K)
MIXING HEIGHT = 5000.00 (M)
ANEMOMETER HEIGHT = 10.00 (M)
WIND PROFILE EXPONENTS = A: .07, B: .07, C: .10
D: .15, E: .35, F: .55

SOURCE
EMISSION RATE = 30.00 (G/SEC)
STACK HEIGHT = 18.20 (M)
EXIT TEMP. = 394.00 (K)
EXIT VELOCITY = 18.50 (M/SEC)
STACK DIAM. = 1.21 (M)

RECEPTOR HEIGHT = .00 (M)

>>>CALCULATED PARAMETERS<<<

VOLUMETRIC FLOW = 21.27 (M**3/SEC)   BUOYANCY FLUX PARAMETER = 17.02 (M**4/SEC**3)

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
1	.50	1.4602E+02	.833	377.3(2)	.52	1.4907E+02	.817	362.6(2)
1	.80	1.8063E+02	.672	242.6(2)	.83	1.8371E+02	.659	233.4(2)
1	1.00	1.9684E+02	.609	197.7	1.04	1.9983E+02	.598	190.4
1	1.50	2.2424E+02	.513	137.9	1.56	2.2684E+02	.495	133.0
1	2.00	2.4512E+02	.439	108.0	2.09	2.4803E+02	.430	104.3
1	2.50	2.6081E+02	.383	90.0	2.61	2.6421E+02	.374	87.1
1	3.00	2.7488E+02	.347	78.0	3.13	2.7782E+02	.339	75.6

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
2	.50	8.3806E+01	2.190	377.3(2)	.52	8.6433E+01	2.111	362.6(2)
2	.80	1.1726E+02	1.464	242.6(2)	.83	1.2067E+02	1.414	233.4(2)
2	1.00	1.3623E+02	1.216	197.7	1.04	1.4001E+02	1.175	190.4
2	1.50	1.7516E+02	.879	137.9	1.56	1.7943E+02	.851	133.0
2	2.00	2.0501E+02	.707	108.0	2.09	2.0941E+02	.685	104.3
2	2.50	2.2824E+02	.601	90.0	2.61	2.3251E+02	.584	87.1
2	3.00	2.4642E+02	.530	78.0	3.13	2.5042E+02	.516	75.6
2	4.00	2.7183E+02	.440	63.1	4.17	2.7505E+02	.429	61.2
2	5.00	2.8867E+02	.372	54.1	5.21	2.9172E+02	.362	52.6

	****WINDS CONSTANT WITH HEIGHT****				****STACK TOP WINDS (EXTRAPOLATED FROM 10.0 METERS)****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
3	2.00	1.8588E+02	1.167	108.0	2.12	1.9309E+02	1.108	102.8
3	2.50	2.1306E+02	.964	90.0	2.65	2.2042E+02	.917	85.8
3	3.00	2.3539E+02	.830	78.0	3.19	2.4261E+02	.791	74.6
3	4.00	2.6880E+02	.665	63.1	4.25	2.7520E+02	.636	60.5
3	5.00	2.9117E+02	.567	54.1	5.31	2.9640E+02	.544	52.0
3	7.00	3.1496E+02	.456	43.8	7.43	3.1761E+02	.440	42.4
3	10.00	3.2269E+02	.374	36.2	10.62	3.2203E+02	.363	35.1
3	12.00	3.1894E+02	.342	33.2	12.74	3.1892E+02	.331	32.2
3	15.00	3.2134E+02	.302	29.5	15.93	3.2117E+02	.293	28.7

Table 12.10 AJAX AT AJAX ALONE (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 81.51737 AND OCCURRED AT (800.0, 310.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	11.61055C(139, 1)	43.34438C(157, 1)	62.62342C(157, 1)	71.08303C(157, 1)	65.00232C(157, 1)
10.0 /	15.11540C(139, 1)	49.92606C(139, 1)	61.34939C(139, 1)	55.87399 (208, 1)	48.59921 (208, 1)
360.0 /	12.43645C(221, 1)	41.70699C(139, 1)	57.79297 (158, 1)	68.05121 (101, 1)	70.16095 (102, 1)
350.0 /	12.44472C(221, 1)	44.75119 (140, 1)	62.01224 (140, 1)	63.00685 (140, 1)	55.55084 (123, 1)
340.0 /	11.44958C(170, 1)	35.38930C(170, 1)	50.33685C(97, 1)	59.31226C(97, 1)	57.81352C(97, 1)
330.0 /	7.79396C(107, 1)	34.89914C(107, 1)	49.51642C(107, 1)	71.58576 (101, 1)	76.00575 (101, 1)
320.0 /	11.34015C(138, 1)	39.54731C(138, 1)	49.57165C(138, 1)	58.99526 (303, 1)	66.36111 (303, 1)
310.0 /	13.86342C(159, 1)	43.23565C(96, 1)	55.09171C(96, 1)	71.78517 (303, 1)	81.51737 (303, 1)
300.0 /	20.60641C(159, 1)	56.96008C(159, 1)	67.10283C(159, 1)	57.40458 (77, 1)	72.79253 (76, 1)
290.0 /	17.49087C(159, 1)	46.57636C(159, 1)	54.15414C(159, 1)	51.60446C(106, 1)	50.20086 (77, 1)
280.0 /	16.73817C(160, 1)	54.66396C(160, 1)	70.10569C(160, 1)	66.85011C(160, 1)	65.24101 (204, 1)
270.0 /	16.49967C(160, 1)	59.41773C(160, 1)	79.15994C(160, 1)	78.03935C(160, 1)	63.75056C(160, 1)
260.0 /	11.03204C(165, 1)	36.30315C(160, 1)	44.97208C(160, 1)	40.52515C(135, 1)	55.89021 (36, 1)
250.0 /	13.91641C(152, 1)	39.12474 (203, 1)	61.20968 (203, 1)	73.80366 (203, 1)	69.06136 (36, 1)
240.0 /	14.22430C(228, 1)	46.47924C(228, 1)	59.29794C(228, 1)	65.62880 (203, 1)	57.14759 (203, 1)
230.0 /	15.96738C(228, 1)	50.13856C(228, 1)	62.38222C(228, 1)	57.24769C(228, 1)	43.00199C(228, 1)
220.0 /	16.93018C(136, 1)	60.48709C(136, 1)	78.97302C(136, 1)	75.76689C(136, 1)	61.91760C(136, 1)
210.0 /	18.20793C(198, 1)	55.18168C(198, 1)	65.15414C(198, 1)	50.33810C(198, 1)	49.92040C(257, 1)
200.0 /	17.92636C(198, 1)	55.99256C(198, 1)	68.09268C(198, 1)	74.46028 (162, 1)	80.01038 (162, 1)

Table 12.10 AJAX AT AJAX ALONE (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 81.51737 AND OCCURRED AT (800.0, 310.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1000.0	1400.0	1800.0	2400.0	3200.0
20.0 /	65.30875C(72, 1)	55.94486C(72, 1)	46.09385C(72, 1)	34.69411C(72, 1)	24.84260C(72, 1)
10.0 /	40.67836 (208, 1)	30.15898C(72, 1)	26.22800C(72, 1)	25.04498C(156, 1)	25.23187C(156, 1)
360.0 /	74.68170 (102, 1)	64.58287 (102, 1)	53.24868 (102, 1)	39.96513 (102, 1)	29.62965C(313, 1)
350.0 /	58.69736 (123, 1)	50.71304 (123, 1)	41.93786 (123, 1)	31.64801 (123, 1)	22.96967 (91, 1)
340.0 /	53.44813C(97, 1)	42.06564C(97, 1)	34.42281C(295, 1)	27.05274C(295, 1)	20.03195C(295, 1)
330.0 /	69.38086 (101, 1)	51.89254 (101, 1)	42.52120 (123, 1)	33.15365 (123, 1)	24.42975 (123, 1)
320.0 /	70.37419 (325, 1)	61.24988 (325, 1)	51.12536 (294, 1)	40.16067 (294, 1)	29.98645 (294, 1)
310.0 /	79.49136 (303, 1)	65.96838 (303, 1)	55.26807 (294, 1)	43.55862 (303, 1)	33.49312 (303, 1)
300.0 /	78.15698 (76, 1)	69.72267 (76, 1)	59.31537 (76, 1)	48.01851 (345, 1)	37.47510 (345, 1)
290.0 /	53.19716 (16, 1)	57.73094 (16, 1)	55.28523 (16, 1)	48.05317 (16, 1)	38.56464 (16, 1)
280.0 /	64.08752 (204, 1)	52.58526 (26, 1)	48.92394 (26, 1)	41.64175 (26, 1)	33.52519 (26, 1)
270.0 /	51.64675C(160, 1)	43.91305 (262, 1)	37.24506 (262, 1)	29.97156 (260, 1)	26.33460C(18, 1)
260.0 /	60.78123 (36, 1)	53.37018 (36, 1)	44.27413 (36, 1)	33.31998 (36, 1)	23.73100 (36, 1)
250.0 /	75.52271 (36, 1)	66.79895 (36, 1)	55.70207 (36, 1)	42.16302 (36, 1)	32.94205C(362, 1)
240.0 /	47.88629 (11, 1)	43.27895 (11, 1)	37.56135C(337, 1)	33.93463C(337, 1)	29.50525C(337, 1)
230.0 /	38.49187 (269, 1)	37.20418 (269, 1)	33.81146 (269, 1)	31.68336 (253, 1)	28.62818 (253, 1)
220.0 /	51.91318C(136, 1)	44.67588C(12, 1)	41.89540C(12, 1)	35.65298C(12, 1)	28.32005C(136, 1)
210.0 /	48.04832C(257, 1)	40.76585C(257, 1)	35.99583C(257, 1)	31.42667C(257, 1)	27.41938C(257, 1)
200.0 /	76.34334 (162, 1)	62.96862 (162, 1)	53.31090 (162, 1)	43.28001 (162, 1)	34.58595 (162, 1)

Table 12.10 AJAX AT AJAX ALONE (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 74.54904 AND OCCURRED AT (1000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	10.54232C(157, 1)	38.84615C(139, 1)	47.34096C(139, 1)	48.41083C(72, 1)	62.57518C(72, 1)
10.0 /	12.02608C(183, 1)	38.29065 (208, 1)	52.83473 (208, 1)	51.55784C(139, 1)	45.42168C(157, 1)
360.0 /	12.07899C(183, 1)	38.86144 (158, 1)	52.45368C(139, 1)	66.35569 (158, 1)	69.16626 (101, 1)
350.0 /	11.48153 (140, 1)	32.69680 (158, 1)	46.32815 (158, 1)	46.67041 (158, 1)	53.05697 (102, 1)
340.0 /	9.02640C(146, 1)	34.84313C(97, 1)	44.69817C(170, 1)	40.31846 (101, 1)	46.14537 (123, 1)
330.0 /	7.76044C(146, 1)	31.05873C(146, 1)	41.07152C(146, 1)	53.45275C(107, 1)	49.76576 (123, 1)
320.0 /	8.24950C(107, 1)	32.27831C(107, 1)	45.12787C(58, 1)	50.53143 (294, 1)	65.82391 (325, 1)
310.0 /	13.16184C(138, 1)	42.76206C(159, 1)	51.44210C(138, 1)	49.86397 (205, 1)	66.76443 (294, 1)
300.0 /	9.20676C(96, 1)	35.13718C(96, 1)	49.55149C(106, 1)	55.06247C(159, 1)	72.18132 (77, 1)
290.0 /	10.08138C(106, 1)	39.87703C(106, 1)	53.50093C(106, 1)	45.90884C(108, 1)	48.29949 (76, 1)
280.0 /	9.05759C(159, 1)	34.49157C(220, 1)	45.50701C(220, 1)	54.95835 (204, 1)	53.02403C(160, 1)
270.0 /	11.18636C(165, 1)	37.25760C(165, 1)	47.19375C(165, 1)	43.14846C(165, 1)	45.25513 (262, 1)
260.0 /	10.79657C(160, 1)	35.61752C(165, 1)	43.22500C(165, 1)	39.95314 (36, 1)	39.28981C(74, 1)
250.0 /	9.36590C(135, 1)	35.92353C(135, 1)	47.87569C(135, 1)	48.98751 (36, 1)	68.68653 (203, 1)
240.0 /	12.60820C(164, 1)	41.54710C(164, 1)	57.11249 (203, 1)	58.01815C(228, 1)	51.19203C(120, 1)
230.0 /	15.55509C(164, 1)	45.77000C(164, 1)	53.02547C(164, 1)	45.30441C(136, 1)	39.41547 (253, 1)
220.0 /	14.51628C(164, 1)	40.68035C(164, 1)	53.60975C(163, 1)	58.96435C(163, 1)	54.61513C(163, 1)
210.0 /	11.31058C(136, 1)	40.25699C(136, 1)	51.17883C(136, 1)	48.05177C(265, 1)	40.75899C(336, 1)
200.0 /	13.90677C(218, 1)	48.10126C(218, 1)	63.08183C(218, 1)	61.16328C(218, 1)	51.69414 (348, 1)

Table 12.10 AJAX AT AJAX ALONE (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX ALONE ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 74.54904 AND OCCURRED AT (1000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1000.0	1400.0	1800.0	2400.0	3200.0
20.0 /	56.49785C(157, 1)	40.84108C(157, 1)	30.63847C(157, 1)	21.24811C(157, 1)	14.79652 (45, 1)
10.0 /	38.16293C(157, 1)	28.18922 (208, 1)	22.76111C(156, 1)	21.05704C(72, 1)	16.43395C(174, 1)
360.0 /	62.50941 (19, 1)	52.14698C(313, 1)	46.08178C(313, 1)	37.86246C(313, 1)	28.48891 (102, 1)
350.0 /	54.50161 (102, 1)	45.32242 (102, 1)	36.46203 (102, 1)	29.30113 (91, 1)	22.70772 (123, 1)
340.0 /	46.91636 (123, 1)	39.89896C(295, 1)	33.57400C(97, 1)	24.81096C(97, 1)	18.20646C(68, 1)
330.0 /	54.79136 (123, 1)	49.73999 (123, 1)	39.40231 (101, 1)	29.22840 (113, 1)	22.17353 (113, 1)
320.0 /	67.47276 (294, 1)	59.84336 (294, 1)	50.72500 (325, 1)	38.23935 (325, 1)	27.36098 (325, 1)
310.0 /	72.55974 (294, 1)	65.04678 (294, 1)	55.16580 (303, 1)	42.86458 (294, 1)	32.38878C(52, 1)
300.0 /	74.54904 (77, 1)	64.50333 (77, 1)	57.61368 (345, 1)	46.19929 (76, 1)	34.12928 (76, 1)
290.0 /	50.89484 (77, 1)	42.50723 (77, 1)	34.69666 (77, 1)	28.71708C(4, 1)	23.64069C(4, 1)
280.0 /	50.67930 (26, 1)	51.34779 (204, 1)	40.52058 (204, 1)	31.55398C(4, 1)	28.89935C(4, 1)
270.0 /	48.98705 (262, 1)	41.40024 (260, 1)	36.97144 (260, 1)	28.77130 (262, 1)	22.68105 (260, 1)
260.0 /	43.18964 (262, 1)	39.75147 (262, 1)	33.93445 (262, 1)	26.19538 (262, 1)	18.99385 (262, 1)
250.0 /	60.20650 (203, 1)	49.78623C(362, 1)	47.31467C(362, 1)	40.84581C(362, 1)	30.20256 (36, 1)
240.0 /	46.94913 (203, 1)	39.29181C(337, 1)	36.81450 (11, 1)	28.52335 (11, 1)	23.40294C(242, 1)
230.0 /	38.35860 (253, 1)	35.30178 (253, 1)	33.79283 (253, 1)	28.37990 (269, 1)	24.49290C(337, 1)
220.0 /	49.53988C(342, 1)	41.54625C(342, 1)	36.14235C(342, 1)	31.40047C(136, 1)	28.09937C(12, 1)
210.0 /	38.82036C(336, 1)	37.15681 (48, 1)	34.62678 (48, 1)	29.61394 (48, 1)	25.56526 (269, 1)
200.0 /	60.14724 (348, 1)	56.72808 (348, 1)	49.18438 (348, 1)	38.60276 (348, 1)	28.59655C(267, 1)

Table 12.11 WIDGET AT AJAX (SELECTED PORTIONS)

*** LESSON 12 AREA NEAR AJAX - 1979 WIDGET ALONE ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1001	0	0	0	.16000E+02	.0	.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 WIDGET ALONE ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 38.46821 AND OCCURRED AT (4800.0, 290.0) *

RANGE (METERS)

DIRECTION / (DEGREES) /	4800.0
340.0 /	19.81420 (281, 3)
330.0 /	22.11671 (354, 6)
320.0 /	24.95645 (357, 2)
310.0 /	29.60266 (13, 3)
300.0 /	37.18775 (300, 7)
290.0 /	38.46821 (25, 7)
280.0 /	30.50081 (25, 8)
270.0 /	29.52203 (59, 1)
260.0 /	21.33785 (287, 8)
250.0 /	31.15698 (362, 6)

Table 12.11 WIDGET AT AJAX (SELECTED PORTIONS) (cont.)

2ND HIGH
3-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 WIDGET ALONE ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 33.62924 AND OCCURRED AT (4800.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 4800.0
340.0 /	16.86043 (54, 3)
330.0 /	18.03007 (113, 6)
320.0 /	20.40831 (122, 6)
310.0 /	28.36519 (110, 6)
300.0 /	33.62924 (79, 1)
290.0 /	29.25260 (155, 2)
280.0 /	30.01970 (18, 6)
270.0 /	26.60070 (18, 3)
260.0 /	19.89116 (261, 2)
250.0 /	23.29087 (310, 3)

HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 WIDGET ALONE ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 11.68659 AND OCCURRED AT (4800.0, 290.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 4800.0
340.0 /	5.23624C(295, 1)
330.0 /	6.34518 (123, 1)
320.0 /	7.30123 (294, 1)
310.0 /	10.06067C(52, 1)
300.0 /	10.10093 (345, 1)
290.0 /	11.68659 (16, 1)
280.0 /	10.94984 (26, 1)
270.0 /	10.12058C(18, 1)
260.0 /	5.93269 (36, 1)
250.0 /	9.66282C(362, 1)

Table 12.11 WIDGET AT AJAX (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 1

*** LESSON 12 AREA NEAR AJAX - 1979 WIDGET ALONE ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 10.21634 AND OCCURRED AT (4800.0, 280.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 4800.0
340.0 /	4.64927C(68, 1)
330.0 /	6.04135 (113, 1)
320.0 /	6.81135 (325, 1)
310.0 /	8.47512 (205, 1)
300.0 /	8.72000 (356, 1)
290.0 /	7.68825C(51, 1)
280.0 /	10.21634C(25, 1)
270.0 /	6.15163 (260, 1)
260.0 /	5.55255C(191, 1)
250.0 /	7.61581 (36, 1)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS)

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
101	0	0	0	.30000E+02	.0	.0	.0	18.20	394.00	18.50	1.21	.00	.00	.00
1001	0	0	0	.16000E+02	4500.0	-1900.0	.0	42.67	505.20	4.00	1.68	23.50	39.90	39.90

HIGH
3-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 267.65390 AND OCCURRED AT (400.0, 340.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	56.01029 (156, 4)	152.74570 (156, 4)	178.48410 (170, 4)	170.89230 (85, 6)	192.58090 (85, 6)
10.0 /	70.92096 (183, 5)	206.68730 (139, 4)	237.18490 (139, 4)	198.01880 (126, 5)	183.39020 (208, 6)
360.0 /	74.61902 (221, 5)	170.96810 (129, 4)	202.06830 (208, 5)	231.11840 (89, 5)	231.14370 (158, 6)
350.0 /	74.61778 (221, 5)	176.87630 (140, 4)	246.52650 (140, 4)	240.02140 (140, 4)	185.98420 (140, 4)
340.0 /	63.67800 (170, 5)	202.88840 (170, 5)	267.65390 (170, 5)	259.18870 (170, 5)	220.39130 (97, 5)
330.0 /	48.22370 (130, 5)	136.58300 (107, 5)	182.78370 (107, 5)	171.24850 (107, 5)	160.08580 (101, 3)
320.0 /	39.57509 (138, 4)	141.16550 (138, 4)	177.32540 (138, 4)	170.62740 (58, 4)	180.13540 (122, 6)
310.0 /	64.49924 (159, 4)	187.27770 (96, 5)	245.36730 (96, 5)	224.70840 (96, 5)	201.43550 (346, 4)
300.0 /	102.77640 (159, 4)	217.29930 (159, 4)	221.06570 (159, 4)	216.31110 (261, 4)	204.15820 (261, 4)
290.0 /	83.78661 (159, 4)	190.74200 (106, 4)	243.58070 (106, 4)	217.68010 (106, 4)	173.16040 (100, 5)
280.0 /	88.58298 (160, 4)	217.68740 (160, 4)	233.36530 (160, 4)	195.16660 (160, 5)	172.31440 (288, 6)
270.0 /	69.60744 (160, 4)	173.72090 (160, 4)	242.88850 (160, 5)	253.40860 (160, 5)	198.02960 (160, 5)
260.0 /	46.84066 (165, 4)	151.89870 (165, 4)	216.11100 (135, 5)	224.88140 (135, 5)	178.60400 (135, 5)
250.0 /	81.23583C(152, 4)	150.32390 (165, 4)	194.70180 (203, 5)	200.77630 (120, 4)	178.43740 (120, 4)
240.0 /	73.73926C(152, 4)	167.64160 (219, 5)	210.36840 (219, 5)	183.12240 (219, 5)	188.69980 (204, 1)
230.0 /	58.82997 (228, 4)	167.99730 (228, 4)	196.55020 (228, 4)	198.51080 (257, 4)	159.99770 (257, 4)
220.0 /	54.99479 (265, 4)	182.69440 (265, 4)	234.64340 (265, 4)	230.12630 (255, 3)	226.64860 (255, 3)
210.0 /	61.75127 (198, 5)	179.85950 (198, 5)	229.44810 (136, 5)	208.48730 (136, 5)	160.72590 (336, 5)
200.0 /	63.43410 (218, 5)	175.39970 (218, 5)	203.82510 (198, 5)	181.62210 (268, 3)	205.30670 (255, 5)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

HIGH
3-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 267.65390 AND OCCURRED AT (400.0, 340.0) *

DIRECTION /	RANGE (METERS)				
(DEGREES) /	1000.0	1400.0	1800.0	2400.0	3200.0
20.0 /	190.89860 (85, 6)	158.66000 (85, 6)	129.50580 (85, 6)	97.23105 (85, 6)	69.75753 (85, 6)
10.0 /	170.59880 (208, 6)	130.88990 (208, 6)	101.01560 (208, 6)	93.98013 (156, 7)	93.25377 (156, 7)
360.0 /	208.01500 (158, 6)	176.53280 (103, 1)	149.31780 (103, 1)	121.76120 (157, 8)	99.93462 (157, 8)
350.0 /	162.02790 (207, 4)	120.98300 (293, 6)	114.06800 (195, 1)	99.17109 (195, 1)	81.12271 (91, 2)
340.0 /	180.96900 (97, 5)	138.43100 (295, 2)	110.58900 (295, 2)	80.79874 (295, 2)	61.27393 (68, 8)
330.0 /	151.65250 (113, 6)	140.56080 (113, 6)	120.84540 (113, 6)	94.41315 (113, 6)	75.15869 (354, 6)
320.0 /	196.25470 (122, 6)	183.13610 (357, 2)	160.28030 (357, 2)	127.08210 (357, 2)	94.63660 (357, 2)
310.0 /	226.25490 (346, 4)	206.50760 (346, 4)	175.90540 (346, 4)	136.31410 (346, 4)	101.23810 (110, 6)
300.0 /	196.21850 (76, 8)	187.40810 (76, 8)	170.47850 (113, 8)	143.75010 (113, 8)	131.89870 (300, 7)
290.0 /	197.03340 (100, 5)	188.71210 (100, 5)	167.83460 (100, 5)	149.14460 (25, 7)	129.53020 (25, 7)
280.0 /	173.43530 (288, 6)	151.68620 (288, 6)	131.96940 (288, 6)	108.28030 (288, 6)	91.26986 (18, 6)
270.0 /	162.95690 (262, 4)	147.91270 (262, 8)	128.13340 (262, 8)	100.65950 (262, 8)	85.27105 (59, 1)
260.0 /	163.08830 (262, 7)	153.81340 (262, 7)	133.16470 (262, 7)	104.28870 (262, 7)	76.71462 (262, 7)
250.0 /	149.77570 (120, 4)	130.69040 (287, 3)	113.60600 (362, 6)	111.59830 (362, 6)	99.30665 (362, 6)
240.0 /	214.05700 (204, 1)	198.53480 (204, 1)	171.18370 (204, 1)	134.26310 (204, 1)	103.92470 (260, 1)
230.0 /	135.41110 (255, 3)	113.10430 (269, 6)	105.07000 (269, 6)	95.27823 (119, 5)	99.12467 (242, 1)
220.0 /	201.70100 (255, 3)	162.39800 (117, 1)	150.55650 (117, 1)	128.94540 (117, 1)	104.19860 (117, 1)
210.0 /	152.85730 (336, 5)	127.69300 (257, 3)	109.54670 (257, 3)	90.42764 (92, 8)	80.94495C(200, 7)
200.0 /	205.26380 (255, 5)	167.84290 (255, 5)	134.27280 (255, 5)	98.33448 (255, 5)	81.04891 (162, 8)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

2ND HIGH
3-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 254.10150 AND OCCURRED AT (600.0, 340.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	50.34964 (183, 5)	142.18500 (139, 4)	173.72070 (157, 5)	170.32080 (157, 5)	184.87790 (45, 5)
10.0 /	68.07846 (139, 4)	185.96920 (183, 5)	204.81070 (183, 5)	187.13940 (276, 5)	171.91430 (276, 5)
360.0 /	63.27360 (129, 4)	170.01240 (139, 4)	198.84030 (89, 5)	230.42780 (158, 6)	214.47070 (91, 6)
350.0 /	56.89342 (168, 4)	151.38910 (153, 4)	190.26480 (158, 4)	178.38170 (207, 4)	181.97060 (207, 4)
340.0 /	48.94437 (146, 5)	154.25300 (97, 5)	228.24740 (97, 5)	254.10150 (97, 5)	203.97910 (170, 5)
330.0 /	47.65584 (170, 5)	132.11150 (170, 5)	164.73470 (97, 4)	155.63780 (101, 3)	146.99720 (101, 1)
320.0 /	39.43113 (130, 5)	126.22650 (58, 4)	175.29590 (58, 4)	170.33690 (207, 3)	176.75630 (207, 3)
310.0 /	54.04807 (138, 5)	168.41630 (159, 4)	212.79840 (107, 4)	198.83740 (107, 4)	193.30380 (205, 6)
300.0 /	51.09862 (130, 5)	135.77050 (130, 5)	184.72710 (261, 4)	176.52040 (106, 5)	170.13680 (76, 8)
290.0 /	58.55334 (160, 4)	166.13700 (159, 4)	177.46010 (241, 4)	166.89060 (108, 4)	166.77880 (77, 6)
280.0 /	47.78181 (243, 4)	151.92220 (243, 4)	193.19190 (160, 5)	179.86480 (220, 4)	153.92200 (165, 6)
270.0 /	50.17060 (243, 4)	165.16130 (160, 5)	205.06240 (243, 4)	207.96480 (243, 4)	176.90680 (243, 4)
260.0 /	45.07244 (160, 4)	149.86110 (135, 5)	184.53440 (165, 4)	169.94690 (120, 5)	173.39490 (253, 3)
250.0 /	46.16044 (165, 4)	138.74740 (135, 5)	186.27960 (135, 5)	195.17390 (203, 5)	173.11950 (203, 6)
240.0 /	50.91697 (228, 4)	158.52470 (228, 4)	191.69960 (228, 4)	182.89110 (203, 5)	167.00970 (308, 5)
230.0 /	55.01474 (136, 4)	161.67660 (164, 4)	193.35770 (164, 4)	190.27420 (253, 5)	158.68780 (255, 3)
220.0 /	50.59608 (136, 5)	179.55450 (136, 5)	232.38820 (136, 5)	215.98740 (265, 4)	173.68470 (136, 6)
210.0 /	54.33493 (198, 4)	177.68180 (136, 5)	210.16640 (198, 5)	198.68190 (163, 5)	153.66880 (163, 5)
200.0 /	55.49731 (198, 5)	169.43170 (198, 5)	199.85460 (218, 5)	171.36670 (198, 5)	172.81910 (162, 6)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

2ND HIGH
3-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 254.10150 AND OCCURRED AT (600.0, 340.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1000.0	1400.0	1800.0	2400.0	3200.0
20.0 /	173.46790 (45, 5)	132.99420 (45, 5)	108.60800 (150, 4)	81.32781 (150, 4)	58.19769 (150, 4)
10.0 /	143.18010 (276, 5)	101.67560 (59, 5)	83.34897 (59, 5)	73.64792 (72, 4)	74.54973 (174, 8)
360.0 /	199.67080 (19, 8)	159.60990 (19, 8)	138.25650 (157, 8)	114.75970 (103, 1)	83.40581 (103, 1)
350.0 /	144.85190 (301, 4)	120.74770 (195, 1)	103.13550 (293, 6)	90.54550 (91, 2)	80.87885 (195, 1)
340.0 /	172.75710 (87, 6)	132.42560 (87, 6)	102.09510 (87, 6)	77.84288 (295, 3)	60.32026 (281, 3)
330.0 /	150.87540 (78, 6)	134.98840 (78, 6)	114.02060 (78, 6)	91.21773 (354, 6)	69.64457 (113, 6)
320.0 /	191.41340 (357, 2)	174.08100 (122, 6)	145.91720 (122, 6)	111.41200 (122, 6)	80.71429 (122, 6)
310.0 /	207.60420 (294, 2)	186.62960 (294, 2)	157.99160 (294, 2)	129.61100 (110, 6)	100.02000 (346, 4)
300.0 /	183.61120 (204, 8)	184.28500 (113, 8)	165.48320 (76, 8)	141.97380 (114, 7)	118.89870 (114, 7)
290.0 /	161.90380 (76, 6)	168.82640 (4, 6)	163.64020 (25, 7)	136.84970 (4, 6)	109.40240 (4, 6)
280.0 /	135.46030 (171, 6)	126.33310 (78, 2)	110.36580 (78, 2)	92.99811 (261, 6)	85.73565 (288, 6)
270.0 /	157.77810 (262, 8)	127.87260 (262, 4)	110.76580 (50, 4)	97.28220 (289, 3)	83.14141 (289, 3)
260.0 /	157.52150 (253, 3)	133.91210 (93, 5)	119.16860 (93, 5)	95.62125 (93, 5)	75.14594 (261, 2)
250.0 /	146.58580 (203, 6)	129.78900 (362, 7)	113.52840 (261, 8)	91.77056 (261, 8)	76.90825 (261, 1)
240.0 /	151.51310 (254, 3)	137.99010 (50, 2)	123.69300 (50, 2)	119.06390 (260, 1)	99.37189 (204, 1)
230.0 /	134.65250 (118, 3)	110.00250 (253, 6)	103.60790 (119, 5)	90.13693 (269, 6)	98.94989 (290, 1)
220.0 /	163.18040 (117, 1)	152.77390 (255, 3)	120.74450 (255, 3)	101.73860 (11, 1)	79.35919 (11, 1)
210.0 /	148.39290 (283, 2)	126.48500 (283, 2)	107.01360 (92, 8)	86.19166 (347, 5)	78.83424 (269, 8)
200.0 /	162.76010 (162, 6)	126.13500 (162, 6)	103.91500 (348, 2)	84.00177 (12, 4)	69.69169 (117, 6)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 82.84127 AND OCCURRED AT (1000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	12.70185C(157, 1)	45.54731C(157, 1)	64.63480C(157, 1)	72.48122C(157, 1)	66.50258C(157, 1)
10.0 /	15.11540C(139, 1)	49.92606C(139, 1)	61.34940C(139, 1)	56.36548 (208, 1)	49.40522 (208, 1)
360.0 /	15.55120C(129, 1)	41.70699C(139, 1)	57.97264 (158, 1)	68.05121 (101, 1)	70.16095 (102, 1)
350.0 /	12.76346C(221, 1)	44.82797 (140, 1)	62.18908 (140, 1)	63.61653 (140, 1)	55.97771 (123, 1)
340.0 /	12.76406C(170, 1)	36.40905C(170, 1)	50.36641C(97, 1)	59.38235C(97, 1)	57.96257C(97, 1)
330.0 /	9.80705 (16, 1)	35.15362C(107, 1)	49.79826C(107, 1)	71.58576 (101, 1)	76.00575 (101, 1)
320.0 /	11.37116C(138, 1)	39.58168C(138, 1)	49.60942C(138, 1)	60.19253 (303, 1)	68.74213 (325, 1)
310.0 /	16.33625C(159, 1)	45.20131C(159, 1)	55.53129C(96, 1)	73.07212 (303, 1)	82.78838 (303, 1)
300.0 /	23.03079C(159, 1)	59.34245C(159, 1)	69.44266C(159, 1)	61.41496 (77, 1)	77.50467 (76, 1)
290.0 /	19.85403C(159, 1)	48.87259C(159, 1)	56.38627C(159, 1)	52.30004C(106, 1)	53.88377 (77, 1)
280.0 /	17.19054C(160, 1)	55.11932C(160, 1)	70.56343C(160, 1)	67.31120C(160, 1)	68.56854 (204, 1)
270.0 /	16.98474C(160, 1)	59.92154C(160, 1)	79.68173C(160, 1)	78.59618C(160, 1)	64.34283C(160, 1)
260.0 /	12.78868C(165, 1)	37.79584C(165, 1)	45.80384C(165, 1)	40.52515C(135, 1)	55.89021 (36, 1)
250.0 /	15.72755C(152, 1)	41.10232 (203, 1)	63.61950 (203, 1)	76.25598 (203, 1)	70.22296 (203, 1)
240.0 /	14.22430C(228, 1)	46.47924C(228, 1)	59.72746 (203, 1)	67.59200 (203, 1)	57.93917 (203, 1)
230.0 /	15.96738C(228, 1)	50.13856C(228, 1)	62.38222C(228, 1)	57.24770C(228, 1)	43.00202C(228, 1)
220.0 /	16.93019C(136, 1)	60.48712C(136, 1)	78.97306C(136, 1)	75.76704C(136, 1)	61.91804C(136, 1)
210.0 /	18.20793C(198, 1)	55.18168C(198, 1)	65.15414C(198, 1)	50.33810C(198, 1)	49.92040C(257, 1)
200.0 /	17.92636C(198, 1)	55.99256C(198, 1)	68.09268C(198, 1)	74.46028 (162, 1)	80.01038 (162, 1)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

HIGH
24-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 82.84127 AND OCCURRED AT (1000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1000.0	1400.0	1800.0	2400.0	3200.0
20.0 /	66.96948C(72, 1)	56.36437C(72, 1)	46.11610C(72, 1)	34.69418C(72, 1)	26.38885C(72, 1)
10.0 /	42.01124 (208, 1)	30.80147C(72, 1)	26.29885C(72, 1)	25.86308C(156, 1)	25.44300C(156, 1)
360.0 /	74.68170 (102, 1)	64.58287 (102, 1)	53.24868 (102, 1)	39.96517 (102, 1)	29.62965C(313, 1)
350.0 /	58.91466 (123, 1)	50.86969 (123, 1)	42.38006 (123, 1)	32.59671 (123, 1)	23.90876 (123, 1)
340.0 /	53.72812C(97, 1)	42.75162C(97, 1)	35.02507C(295, 1)	28.23100C(295, 1)	21.18034C(295, 1)
330.0 /	69.38086 (101, 1)	51.89255 (101, 1)	42.63803 (123, 1)	33.43399 (113, 1)	26.00041 (113, 1)
320.0 /	73.18286 (325, 1)	63.68524 (325, 1)	52.69571 (325, 1)	41.78477 (294, 1)	32.01308 (294, 1)
310.0 /	80.63929 (303, 1)	66.74454 (303, 1)	56.10651 (294, 1)	44.14036 (205, 1)	34.71309C(52, 1)
300.0 /	82.84127 (76, 1)	74.34448 (76, 1)	63.86125 (76, 1)	50.93165 (345, 1)	40.19402 (345, 1)
290.0 /	62.04656 (16, 1)	65.93661 (16, 1)	62.91759 (16, 1)	54.93714 (16, 1)	44.61984 (16, 1)
280.0 /	67.33740 (204, 1)	56.58559 (26, 1)	52.72243 (26, 1)	45.31227 (26, 1)	37.19549 (26, 1)
270.0 /	52.27596C(160, 1)	43.91589 (262, 1)	37.25043 (262, 1)	30.06617 (260, 1)	29.18644C(18, 1)
260.0 /	60.78125 (36, 1)	53.37037 (36, 1)	44.27520 (36, 1)	33.32791 (36, 1)	23.77824 (36, 1)
250.0 /	75.52287 (36, 1)	66.80123 (36, 1)	55.71805 (36, 1)	42.27849 (36, 1)	32.94629C(362, 1)
240.0 /	47.88629 (11, 1)	43.27895 (11, 1)	37.89062C(337, 1)	34.13377C(337, 1)	29.74179C(337, 1)
230.0 /	38.49791 (269, 1)	37.28345 (269, 1)	34.16337 (269, 1)	31.89151 (253, 1)	29.34775 (253, 1)
220.0 /	51.91424C(136, 1)	44.67588C(12, 1)	41.89540C(12, 1)	35.65298C(12, 1)	28.37531C(136, 1)
210.0 /	48.04832C(257, 1)	40.76585C(257, 1)	35.99583C(257, 1)	31.42667C(257, 1)	27.41938C(257, 1)
200.0 /	76.34334 (162, 1)	62.96862 (162, 1)	53.31090 (162, 1)	43.28001 (162, 1)	34.58595 (162, 1)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 78.26305 AND OCCURRED AT (1000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 200.0	300.0	400.0	600.0	800.0
20.0 /	11.61055C(139, 1)	38.84616C(139, 1)	47.34096C(139, 1)	50.87265C(72, 1)	64.43963C(72, 1)
10.0 /	12.02608C(183, 1)	38.48476 (208, 1)	53.11108 (208, 1)	51.86423C(157, 1)	46.78115C(157, 1)
360.0 /	12.76254C(221, 1)	38.95311 (158, 1)	52.45368C(139, 1)	66.86317 (158, 1)	69.16627 (101, 1)
350.0 /	12.15715C(129, 1)	32.76903 (158, 1)	46.46341 (158, 1)	47.03749 (158, 1)	53.05697 (102, 1)
340.0 /	9.71621 (16, 1)	34.8[illegible]74C(97, 1)	45.42636C(170, 1)	40.43875C(170, 1)	46.72323 (123, 1)
330.0 /	9.07062 (130, 1)	31.07681C(146, 1)	41.09248C(146, 1)	53.78353C(107, 1)	50.50007 (123, 1)
320.0 /	10.35856 (130, 1)	33.07542C(58, 1)	47.68719C(58, 1)	51.62842 (325, 1)	67.22526 (303, 1)
310.0 /	13.18936C(138, 1)	43.69253C(96, 1)	53.62308C(159, 1)	53.85547 (205, 1)	68.56286 (205, 1)
300.0 /	10.52288 (130, 1)	35.59461C(96, 1)	50.27900C(106, 1)	59.51699 (76, 1)	76.03792 (77, 1)
290.0 /	10.87524C(106, 1)	40.64429C(106, 1)	54.24300C(106, 1)	49.30209C(129, 1)	52.02004 (76, 1)
280.0 /	11.35069C(159, 1)	34.72032C(220, 1)	45.73575C(220, 1)	58.35757 (204, 1)	53.48706C(160, 1)
270.0 /	12.68643C(165, 1)	39.02793C(165, 1)	49.23797C(165, 1)	45.69348C(165, 1)	45.25604 (262, 1)
260.0 /	11.31482C(160, 1)	36.85783C(160, 1)	45.56396C(160, 1)	39.99875 (203, 1)	40.46247C(74, 1)
250.0 /	11.00424 (16, 1)	35.92353C(135, 1)	47.87569C(135, 1)	48.98751 (36, 1)	69.06139 (36, 1)
240.0 /	13.56347C(152, 1)	41.63810C(164, 1)	59.29794C(228, 1)	58.01815C(228, 1)	53.26713C(120, 1)
230.0 /	15.67794C(164, 1)	45.85334C(164, 1)	53.09236C(164, 1)	45.30451C(136, 1)	39.41627 (253, 1)
220.0 /	14.63186C(164, 1)	40.76000C(164, 1)	53.60975C(163, 1)	58.96435C(163, 1)	54.61513C(163, 1)
210.0 /	11.41252 (16, 1)	40.25702C(136, 1)	51.17889C(136, 1)	48.05177C(265, 1)	40.75899C(336, 1)
200.0 /	13.90677C(218, 1)	48.10126C(218, 1)	63.08183C(218, 1)	61.16328C(218, 1)	51.69414 (348, 1)

Table 12.12 COMBINED ANALYSIS AT AJAX (SELECTED PORTIONS) (cont.)

2ND HIGH
24-HR
SGROUP# 3

*** LESSON 12 AREA NEAR AJAX - 1979 AJAX PLUS WIDGET ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 101, 1001,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 78.26305 AND OCCURRED AT (1000.0, 300.0) *

DIRECTION / (DEGREES) /	RANGE (METERS) 1000.0	1400.0	1800.0	2400.0	3200.0
20.0 /	58.61892C(157, 1)	41.55904C(157, 1)	30.65417C(157, 1)	21.28341 (62, 1)	14.99825C(150, 1)
10.0 /	40.10762C(157, 1)	30.43935 (208, 1)	23.61873C(156, 1)	21.05742C(72, 1)	16.43617C(174, 1)
360.0 /	64.92846 (19, 1)	53.49788 (19, 1)	46.08178C(313, 1)	37.86246C(313, 1)	28.49833 (102, 1)
350.0 /	54.50161 (102, 1)	45.32242 (102, 1)	37.01149 (91, 1)	30.20278 (91, 1)	23.22070 (91, 1)
340.0 /	47.27400 (123, 1)	40.12239C(295, 1)	34.69614C(97, 1)	26.20352C(97, 1)	18.58320C(97, 1)
330.0 /	55.35029 (123, 1)	49.99982 (123, 1)	39.46958 (113, 1)	33.27960 (123, 1)	24.75306 (123, 1)
320.0 /	68.47856 (294, 1)	60.97720 (294, 1)	52.43460 (294, 1)	39.66574 (325, 1)	28.63813 (325, 1)
310.0 /	73.36034 (294, 1)	65.87283 (294, 1)	56.00613 (205, 1)	43.87355 (303, 1)	33.94335 (303, 1)
300.0 /	78.26305 (77, 1)	67.96140 (77, 1)	60.67305 (345, 1)	50.60360 (76, 1)	38.30296 (76, 1)
290.0 /	54.40293 (77, 1)	45.70465 (77, 1)	37.62682 (77, 1)	32.07075C(4, 1)	26.92928C(51, 1)
280.0 /	55.01532 (26, 1)	54.42948 (204, 1)	43.42508 (204, 1)	36.22620C(4, 1)	33.01196C(4, 1)
270.0 /	48.98843 (262, 1)	41.67409 (260, 1)	37.10951 (260, 1)	29.30859C(18, 1)	22.86171 (260, 1)
260.0 /	43.19423 (262, 1)	39.76556 (262, 1)	33.97340 (262, 1)	26.33386 (262, 1)	19.69586C(191, 1)
250.0 /	60.89425 (203, 1)	49.78623C(362, 1)	47.31467C(362, 1)	40.84594C(362, 1)	30.68979 (36, 1)
240.0 /	47.48554C(120, 1)	39.66240C(337, 1)	36.81450 (11, 1)	29.28264 (262, 1)	23.80990C(242, 1)
230.0 /	38.36119 (253, 1)	35.31800 (253, 1)	33.85108 (253, 1)	29.10521 (269, 1)	26.40363C(290, 1)
220.0 /	49.53988C(342, 1)	41.54625C(342, 1)	36.14235C(342, 1)	31.43200C(136, 1)	28.09937C(12, 1)
210.0 /	38.82036C(336, 1)	37.28000 (48, 1)	35.22285 (48, 1)	30.14626 (48, 1)	25.59523 (269, 1)
200.0 /	60.14724 (348, 1)	56.72808 (348, 1)	49.18438 (348, 1)	38.60276 (348, 1)	28.59655C(267, 1)

Lesson 13

Other Modeling Considerations

I. Fugitive Dust and Fugitive Emissions

Example Source

Source Type	Area
Emission Rate (g/s/m^2)	0.001
Side Length (m)	30.0
Settling Categories	6

Mass Fraction
.10000, .40000, .28000, .12000, .0[illegible]0, .04000,

Settling Velocity (m/s)
.0010, .0070, .0190, .0370, .0610, .0990,

Surface Reflection Coefficient
1.00000, .82000, .72000, .65000, .59000, .50000,

Note: Settling parameters are from the ISCST User's Guide Example. See Table 13.1 for details.

Concentrations With and Without Settling
Baton Rouge 1979

Downwind Distance (m)	-- Source Ht. 1.0 m -- Without Settling	With Settling	-Source Ht. 10.0 m- Without Settling	With Settling
25	**10808.28**	**9757.80**	786.39	723.97
50	8076.10	7805.12	821.15	779.80
100	5597.82	4945.92	**911.50**	**980.77**
200	3449.06	2774.51	658.22	734.42
300	2333.99	1784.53	540.23	980.67
500	1203.38	866.69	613.06	768.55
1000	426.87	281.62	332.41	309.45
2000	150.79	88.25	135.75	101.36
3000	84.20	44.71	78.69	51.54
5000	42.00	18.88	40.27	21.72
10000	16.67	5.63	16.29	6.41
20000	6.93	1.54	6.84	1.73
30000	4.25	0.72	4.20	0.80

Are concentrations always reduced by using settling? (No.)

II. Velocity dependent emissions

The ISC models allow the user to scale emission rates dependent on wind speed and stability class. The following is one technique for calculating scalars:

$$S_i = \frac{v_i^2}{\Sigma (F_i v_i^2)}$$

Where:
S_i = Scalar for wind-speed class i
v_i = Average wind-speed for class i
F_i = Freq. of occurrence of class i

EXAMPLE 1
SCALARS FOR FUGITIVE EMISSIONS
TYPICAL AVERAGE WIND SPEEDS

	Wind-Speed Class						
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	TOTAL
Ave Sp (v)	1.5	2.5	4.3	6.8	9.5	12.5	
Freq. (F)	0.16644	0.43242	0.22032	0.16381	0.01598	0.00103	1.000
v^2	2.250	6.250	18.490	46.240	90.250	156.250	
$F*v^2$	0.3745	2.703	4.074	7.575	1.442	0.1609	16.329
Scalar (S)	0.1378	0.383	1.132	2.832	5.527	9.569	
CHECK							
F_i*S_i	0.0229	0.1656	0.2494	0.4639	0.0883	0.0099	1.000

NOTE: The wind-speed class boundaries are the default values used in ISCST. The ISCLT values are used for the average speed for each class. The frequency of occurrence was calculated from the Baton Rouge 1979 hourly binary file.

EXAMPLE 2
SCALARS FOR FUGITIVE EMISSIONS
ACTUAL AVERAGE WIND SPEEDS

	Wind-Speed Class						
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	TOTAL
Ave Sp (v)	1.001	2.311	4.031	5.920	8.870	11.832	
Freq. (F)	0.16644	0.43242	0.22032	0.16381	0.01598	0.00103	1.000
v^2	1.002	5.341	16.249	35.046	78.677	139.996	276.311
$F*v^2$	0.1668	2.310	3.580	5.741	1.257	0.1442	13.199
Scalar (S)	0.0759	0.405	1.231	2.655	5.961	10.61	
CHECK							
F_i*S_i	0.0126	0.1751	0.2712	0.4349	0.0953	0.0109	1.000

NOTE: The wind-speed class boundaries are the ISCST default values. The average speed for each class and the frequency of occurrence was calculated from the Baton Rouge 1979 hourly binary file.

Comparison of Concentrations With and Without
Velocity Dependent Emission Rates
(Same Source and Met. Data as Section I)

Downwind Distance (m)	------ Source Ht. 1.0 m ----- Without Scalars	With Example 1 Scalars	With Example 2 Scalars	------ Source Ht. 10.0 m ----- Without Scalars	With Example 1 Scalars	With Example 2 Scalars
25	10808.28	9242.93	10248.45	786.39	214.44	226.76
50	8076.10	5565.66	6171.14	821.15	597.43	560.09
100	5597.82	3091.28	2898.07	911.50	687.20	644.24
200	3449.06	1320.99	1396.87	658.22	559.15	588.41
300	2333.99	893.92	945.26	540.23	396.38	417.12
500	1203.38	460.89	487.36	613.06	234.80	248.29
1000	426.87	163.50	172.88	332.41	127.32	134.62
2000	150.79	57.75	61.07	135.75	51.99	54.97
3000	84.20	32.25	34.10	78.69	30.14	31.86
5000	42.00	16.09	17.01	40.27	15.42	16.30
10000	16.67	6.39	6.75	16.29	6.24	6.59
20000	6.93	3.25	3.04	6.84	3.25	3.04
30000	4.25	2.30	2.15	4.20	2.30	2.15

Table 13.2 presents details of the above comparison.

III. Expected Exceedance

Goal -- To determine the probability of a power plant causing a violation of a short-term standard.

Methodology -- Determine the frequency distribution of SO_2 emission rates. Randomize the emission data between multiple runs of ISCST. Express results of the multiple runs as Violation Probability -vs- Mean Emission Rate.

IV. Chemical Transformation

A. NO_x -- If site specific data is available, it is allowed to be used. Some states and locals may allow "typical" values (e.g. TACB regulations contain factors to be used for IC engines).

B. SO_2 -- Generally, use a half-life of 4 hours for urban areas. No decay for rural areas.

C. Discuss other considerations

V. Background Pollutant Concentrations

A. Use monitoring data from a nearby monitor or from a monitor in a similar area.

B. Eliminate values when the wind is blowing from an existing source.

VI. Accuracy and Uncertainty of Model Results (50% to 200%)

VII. Summary

VIII. Questions

Table 13.1 GRAVITATIONAL SETTLING (SELECETED PORTIONS)

ISCST (DATED 88207)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 1. GUIDELINE MODELS
IN UNAMAP (VERSION 6) JUNE 88.
SOURCE: UNAMAP FILE ON EPA'S UNIVAC AT RTP, NC.

*** LESSON 13 - GRAVITATIONAL SETTLING ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	2	0	0	.10000E-02	-15.0	-15.0	.0	1.00	.00	30.00	.00	.00	.00	.00
2	2	0	6	.10000E-02	-15.0	-15.0	.0	1.00	.00	30.00	.00	.00	.00	.00
3	2	0	0	.10000E-02	-15.0	-15.0	.0	10.00	.00	30.00	.00	.00	.00	.00
4	2	0	6	.10000E-02	-15.0	-15.0	.0	10.00	.00	30.00	.00	.00	.00	.00

*** LESSON 13 - GRAVITATIONAL SETTLING ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 2 ***

MASS FRACTION =
.10000, .40000, .28000, .12000, .06000, .04000,

SETTLING VELOCITY(METERS/SEC) =
.0010, .0070, .0190, .0370, .0610, .0990,

SURFACE REFLECTION COEFFICIENT =
1.00000, .82000, .72000, .65000, .59000, .50000,

*** SOURCE NUMBER = 4 ***

MASS FRACTION =
.10000, .40000, .28000, .12000, .06000, .04000,

SETTLING VELOCITY(METERS/SEC) =
.0010, .0070, .0190, .0370, .0610, .0990,

SURFACE REFLECTION COEFFICIENT =
1.00000, .82000, .72000, .65000, .59000, .50000,

Table 13.1 GRAVITATIONAL SETTLING (SELECETED PORTIONS) (cont.)

HIGH
1-HR
SGROUP# 1

*** LESSON 13 - GRAVITATIONAL SETTLING ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 10808.28000 AND OCCURRED AT (25.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	10808.28000 (37,21)	8076.10700 (59,24)	5597.82700 (79, 6)	3449.06300 (3, 1)	2333.99000 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	1203.38000 (3, 1)	426.87960 (3, 1)	150.79300 (3, 1)	84.20695 (3, 1)	42.00693 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	16.67384 (3, 1)	6.93745 (3, 1)	4.25386 (3, 1)

HIGH
1-HR
SGROUP# 2

*** LESSON 13 - GRAVITATIONAL SETTLING ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 2,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 9757.80700 AND OCCURRED AT (25.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	9757.80700 (37,21)	7805.12700 (59,24)	4945.92600 (79, 6)	2774.51300 (3, 1)	1784.53500 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	866.69080 (3, 1)	281.62340 (3, 1)	88.25516 (3, 1)	44.71450 (3, 1)	18.88219 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	5.63368 (3, 1)	1.54918 (116, 5)	.72396 (359, 3)

Table 13.1 GRAVITATIONAL SETTLING (SELECETED PORTIONS) (cont.)

HIGH
1-HR
SGROUP# 3

*** LESSON 13 - GRAVITATIONAL SETTLING ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 3,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 911.50990 AND OCCURRED AT (100.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	786.39320 (233,12)	821.15920 (179,11)	911.50990 (201,19)	658.22190 (60, 3)	540.23150 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	613.06760 (3, 1)	332.41660 (3, 1)	135.75220 (3, 1)	78.69114 (3, 1)	40.27111 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	16.29500 (3, 1)	6.84367 (3, 1)	4.20966 (3, 1)

HIGH
1-HR
SGROUP# 4

*** LESSON 13 - GRAVITATIONAL SETTLING ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 4,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 980.77010 AND OCCURRED AT (100.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	723.97130 (233,12)	779.80070 (60,15)	980.77010 (201,19)	734.42710 (365, 1)	980.67590 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	768.55250 (3, 1)	309.45210 (3, 1)	101.36180 (3, 1)	51.54033 (3, 1)	21.72863 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	6.41751 (3, 1)	1.73227 (116, 5)	.80155 (359, 3)

Table 13.2 VELOCITY DEPENDENT EMISSION RATES 1979 (SELECETED PORTIONS)

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***
*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	2	0	0	.10000E-02	-15.0	-15.0	.0	1.00	.00	30.00	.00	.00	.00	.00
2	2	0	0	.10000E-02	-15.0	-15.0	.0	1.00	.00	30.00	.00	.00	.00	.00
3	2	0	0	.10000E-02	-15.0	-15.0	.0	1.00	.00	30.00	.00	.00	.00	.00
4	2	0	0	.10000E-02	-15.0	-15.0	.0	10.00	.00	30.00	.00	.00	.00	.00
5	2	0	0	.10000E-02	-15.0	-15.0	.0	10.00	.00	30.00	.00	.00	.00	.00
6	2	0	0	.10000E-02	-15.0	-15.0	.0	10.00	.00	30.00	.00	.00	.00	.00

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***
* SOURCE EMISSION RATE SCALARS WHICH VARY WITH STABILITY AND WIND SPEED *

	STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
SOURCE NO. = 2							
	A	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	B	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	C	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	D	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	E	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	F	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
SOURCE NO. = 3							
	A	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	B	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	C	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	D	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	E	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	F	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
SOURCE NO. = 5							
	A	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	B	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	C	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	D	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	E	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
	F	.13800E+00	.38300E+00	.11320E+01	.28320E+01	.55270E+01	.95690E+01
SOURCE NO. = 6							
	A	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	B	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	C	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	D	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	E	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02
	F	.75900E-01	.40500E+00	.12310E+01	.26550E+01	.59610E+01	.10610E+02

Table 13.2 VELOCITY DEPENDENT EMISSION RATES 1979 (SELECETED PORTIONS) (cont.)

HIGH
1-HR
SGROUP# 1

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 10808.28000 AND OCCURRED AT (25.0, .0) *

Y-AXIS (METERS) / X-AXIS (METERS)	25.0	50.0	100.0	200.0	300.0
.0 /	10808.28000 (37,21)	8076.10700 (59,24)	5597.82700 (79, 6)	3449.06300 (3, 1)	2333.99000 (3, 1)

Y-AXIS (METERS) / X-AXIS (METERS)	500.0	1000.0	2000.0	3000.0	5000.0
.0 /	1203.38000 (3, 1)	426.87960 (3, 1)	150.79300 (3, 1)	84.20695 (3, 1)	42.00693 (3, 1)

Y-AXIS (METERS) / X-AXIS (METERS)	10000.0	20000.0	30000.0
.0 /	16.67384 (3, 1)	6.93745 (3, 1)	4.25386 (3, 1)

HIGH
1-HR
SGROUP# 2

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 2,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 9242.92700 AND OCCURRED AT (25.0, .0) *

Y-AXIS (METERS) / X-AXIS (METERS)	25.0	50.0	100.0	200.0	300.0
.0 /	9242.92700 (56, 1)	5565.66300 (82,11)	3091.27600 (358,22)	1320.99100 (3, 1)	893.91810 (3, 1)

Y-AXIS (METERS) / X-AXIS (METERS)	500.0	1000.0	2000.0	3000.0	5000.0
.0 /	460.89460 (3, 1)	163.49490 (3, 1)	57.75372 (3, 1)	32.25126 (3, 1)	16.08865 (3, 1)

Y-AXIS (METERS) / X-AXIS (METERS)	10000.0	20000.0	30000.0
.0 /	6.38608 (3, 1)	3.24873 (234,12)	2.29624 (234,12)

Table 13.2 VELOCITY DEPENDENT EMISSION RATES 1979 (SELECETED PORTIONS) (cont.)

HIGH
1-HR
SGROUP# 3

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 3,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 10248.45000 AND OCCURRED AT (25.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	10248.45000 (56, 1)	6171.14500 (82,11)	2898.07100 (358,22)	1396.87000 (3, 1)	945.26600 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	487.36900 (3, 1)	172.88620 (3, 1)	61.07118 (3, 1)	34.10381 (3, 1)	17.01281 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	6.75291 (3, 1)	3.04568 (234,12)	2.15273 (234,12)

HIGH
1-HR
SGROUP# 4

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 4,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 911.50990 AND OCCURRED AT (100.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	786.39320 (233,12)	821.15920 (179,11)	911.50990 (201,19)	658.22190 (60, 3)	540.23150 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	613.06760 (3, 1)	332.41660 (3, 1)	135.75220 (3, 1)	78.69114 (3, 1)	40.27111 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	16.29500 (3, 1)	6.84367 (3, 1)	4.20966 (3, 1)

Table 13.2 VELOCITY DEPENDENT EMISSION RATES 1979 (SELECETED PORTIONS) (cont.)

HIGH
1-HR
SGROUP# 5

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 5,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 687.19930 AND OCCURRED AT (100.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	214.44310 (179,11)	597.43280 (234,12)	687.19930 (278,14)	559.15390 (358, 6)	396.38030 (358, 6)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	234.80490 (3, 1)	127.31560 (3, 1)	51.99309 (3, 1)	30.13870 (3, 1)	15.42383 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	6.24098 (3, 1)	3.24873 (234,12)	2.29624 (234,12)

HIGH
1-HR
SGROUP# 6

*** LESSON 13 - VELOCITY DEPENDENT EMISSION RATES ***

* HIGHEST 1-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 6,
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 644.24930 AND OCCURRED AT (100.0, .0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 25.0	50.0	100.0	200.0	300.0
.0 /	226.76110 (179,11)	560.09310 (234,12)	644.24930 (278,14)	588.41570 (82,14)	417.12330 (82,14)

Y-AXIS / (METERS) /	X-AXIS (METERS) 500.0	1000.0	2000.0	3000.0	5000.0
.0 /	248.29240 (3, 1)	134.62870 (3, 1)	54.97966 (3, 1)	31.86991 (3, 1)	16.30980 (3, 1)

Y-AXIS / (METERS) /	X-AXIS (METERS) 10000.0	20000.0	30000.0
.0 /	6.59948 (3, 1)	3.04568 (234,12)	2.15273 (234,12)

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(Please read Instructions on the reverse before completing)

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16. ABSTRACT

The instructor's guide is used in a classroom training study program designed to help students develop a working knowledge of the theory and application of dispersion modeling. It presents detailed information on several aspects of dispersion modeling such as: the habitat of modeling, basics of computer modeling, meteorological parameters required for modeling, etc. A comprehensive study of modeling strategies is discussed and an actual case study application is included at the end of the course.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
PSD	GEP		
SIP	SARA		
NAAQS	VALLEY		
PTPLU	COMPLEX I		
ISCST	INPUFF		
CRSTER	SPILLS		
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