SUPPORTIVE DATA AND METHODS FOR THE EVALUATION OF AIRPOL-4

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Department of Highways & Transportation and the University of Virginia)

Charlottesville, Virginia

May 1975
VHTRC 75-R57

ABSTRACT

This is the fourth in a series of reports documenting AIRPOL-4, the Virginia Department of Highways and Transportation line-source model for predicting carbon monoxide concentrations within the microscale environments of highways. The purpose of this report is to present the detailed data and methods involved in the analysis and comparative evaluation of AIRPOL-4.

The fifth report in this series will detail the algorithmic development and operation of the AIRPOL-4 computer program.

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INTRODUCTION

This report documents the data and methods employed in the analysis and comparative evaluation of the Virginia (AIRPOL-4), California (CALAIR) and EPA (HIWAY) line-source prediction models. Sections three through seven of this report provide descriptions of all test sites; detail the observed meteorological, traffic, and receptor location parameters for each sampling period for each test site; list the inputs for each of the prediction models for each sampling period; list the observed and predicted carbon monoxide (CO) levels at each receptor location for each sampling period; and present the performance statistics of each of the prediction models for each test site. The eighth section summarizes the data and performance statistics relative to all sampling periods for all test sites. Section nine presents the performance statistics of each of the above prediction models relative to the meteorological and geometric parameters encountered in this study. Section ten details the findings of this study with respect to the relationship between observed airport and roadside wind speeds. Sections eleven and twelve contain listings of the CALAIR and HIWAY computer programs, respectively, used in the comparative analysis of AIRPOL-4. Section thirteen details the Turner and Pasquill stability class algorithms used in the AIRPOL study.

The reader should note throughout this report that since the California model cannot process wind speeds less than 2.0 mph (0.89 m/s), such data have been excluded from the CALAIR input and analysis listings. The reader should also note that unless otherwise specified the stability class parameters used in the California and EPA models were determined according to the Turner algorithm. All references to the Virginia model explicitly identify the appropriate stability class algorithm.

SITE 1, DATA, RESULTS, AND PERFORMANCE STATISTICS

This section describes the physical characteristics of Site 1; details the observed meteorological, traffic, and receptor location parameters for each of the 21 sampling periods; lists the inputs used with the AIRPOL-4, HIWAY, and CALAIR prediction models for each of the sampling intervals; lists the actual and predicted CO levels at each receptor location for each of the sampling intervals; and presents the performance statistics of the Virginia (Turner and Pasquill) and the California and EPA (Turner only) prediction models for the total Site 1 data set. Tables 1 through 21 present the observed and predicted CO levels for sampling periods A through U, respectively. Tables 22, 23, and 24 present the downwind, upwind, and upwind and downwind performance statistics, respectively, of the prediction models relative to the total Site 1 data set.

Site 1, Figure 1, is located on Interstate 495 near Telegraph Road in Fairfax, Virginia (U. S. Geological Survey, 7.5 minute Topographic Map, Alexandria Quadrangle, Virginia - District of Columbia - Maryland, UTM coordinates 4,296,690 m N by 318,580 m E). I-495 at this locagion is an at-grade, six-lane, dual-divided facility with a 37-foot (11.3-m) median. The highway runs approximately east and west. The area north of the highway is essentially open while the area south of the facility contains scattered single-family dwellings. The nearest external pollutant source of any significance is Telegraph Road, located about 2,500 feet (750 m) east of the site.

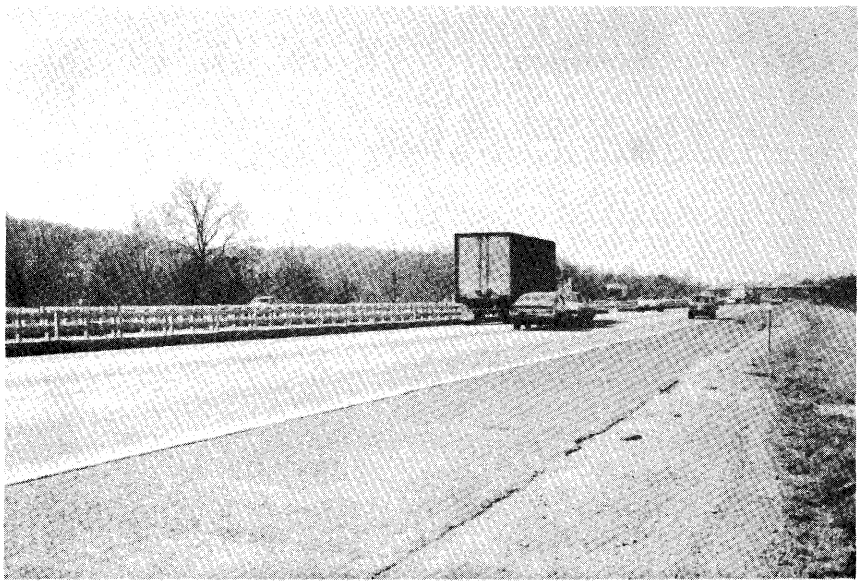

Figure 1. Site 1, an at-grade site located on Interstate 495 near Telegraph Road in Fairfax County, Virginia.

TEST A FOR SITE 1 WAS MADE ON 6/14/73 FROM 17:05 TO 18:05 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND A, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.6 MPH (2.50 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.9 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 50 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (3580, 57(92), 8) AND (2580, 60(97), 10).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   73       B A  56
1AD E 2580              60       10       3      40 40            D 50 10  12  50
1AD W 3580              57        8       3      40 40            D 50 10  85  50
ADD
1AU W 3580              57        8       3      40 40            U 50 10  18  50
1AU E 2580              60       10       3      40 40            U 50 10  91  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                1A
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.003627169.003627169.003627169.005804040.005804040.005804040

     220.  2.503423        2.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               64.6176    1.5240
               95.0976    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                1A
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.003627169.003627169.003627169.005804040.005804040.005804040

     220.  2.503423        1.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               64.6176    1.5240
               95.0976    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
      6160.26.57  5.6  50.  0.  5.  12. 2   1A  28.00
X
      6160.26.57  5.6  50.  0.  5.  62. 2   1A  28.00
X
      6160.26.57  5.6  50.  0.  5. 112. 2   1A  28.00
X
      6160.26.57  5.6  50.  0.  5. 212. 2   1A  28.00
X
      6160.26.57  5.6  50.  0.  5. 312. 2   1A  28.00
X
      6160.26.57  5.6  50.  0. 10.  12. 2   1A  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
      6160.26.57  5.6  50.  0.  5.  12. 1   1A  28.00
X
      6160.26.57  5.6  50.  0.  5.  62. 1   1A  28.00
X
      6160.26.57  5.6  50.  0.  5. 112. 1   1A  28.00
X
      6160.26.57  5.6  50.  0.  5. 212. 1   1A  28.00
X
      6160.26.57  5.6  50.  0.  5. 312. 1   1A  28.00
X
      6160.26.57  5.6  50.  0. 10.  12. 1   1A  28.00
```

TABLE 1

PREDICTIONS FOR TEST A, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.30	1.40	1.19	1.30	1.40	1.99	1.80
D	5	62	2.80	1.04	0.82	0.93	0.93	1.19	1.00
D	5	112	1.10	0.78	0.59	0.83	0.68	0.99	0.84
D	5	212	1.00	0.52	0.38	0.64	0.46	0.81	0.61
D	5	312	1.10	0.39	0.27	0.54	0.35	0.71	0.49
D	10	12	0.0	1.18	1.03	1.00	1.00	1.75	1.60
U	5	18	0.20	0.58	0.74	*****	*****	*****	*****
U	5	68	0.40	0.0	0.05	*****	*****	*****	*****
U	5	118	0.0	0.0	0.02	*****	*****	*****	*****
U	10	18	0.30	0.34	0.47	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 5 FOR SITE 1 WAS MADE ON 6/15/73 FROM 7:45 TO 8:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE A AND A, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 1.4 MPH (0.63 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.5 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 55 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2600, 59(95), 15) AND (3718, 58(93), 10).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
         TELEGRAPH RD, & I495          60   73      A A  14
1RD E 3718              58      10      3     40 40            D 55 10  12  50
1RD W 2600              59      15      3     40 40            D 55 10  85  50
ADD
1RD W 2600              59      15      3     40 40            U 55 10  18  50
1RD E 3718              58      10      3     40 40            U 55 10  91  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  1R
   -1219.          0.       1219.          0.     0.0      33.2232   11.2776        6.
.005362239.005362239.005362239.003954846.003954846.003954846

     215.  0.625856          1.    600.0
0.001
                18.8976    1.5240
                34.1376    1.5240
                64.6176    1.5240
                95.0976    1.5240
                 3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                  1R
   -1219.          0.       1219.          0.     0.0      33.2232   11.2776        6.
.005362239.005362239.005362239.003954846.003954846.003954846

     215.  0.625856          1.    600.0
0.001
                18.8976    1.5240
                34.1376    1.5240
                64.6176    1.5240
                95.0976    1.5240
                 3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

1R, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 2

PREDICTIONS FOR TEST B, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	62	2.20	1.53	1.53	4.30	4.30	*****	*****
D	5	112	1.30	1.09	1.09	3.10	3.10	*****	*****
D	5	212	1.50	0.68	0.68	2.00	2.00	*****	*****
D	5	312	2.10	0.49	0.49	1.50	1.50	*****	*****
D	10	12	6.50	1.79	1.79	4.00	4.00	*****	*****
U	5	18	3.90	0.74	0.74	*****	*****	*****	*****
U	5	68	2.10	0.03	0.03	*****	*****	*****	*****
U	5	118	0.80	0.01	0.01	*****	*****	*****	*****
U	10	18	4.40	0.46	0.46	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST C FOR SITE 1 WAS MADE ON 2/13/74 FROM 15:30 TO 16:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 7.7 MPH (3.44 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.4 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 86 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2440, 55(88), 13) AND (3008, 55(88), 11).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          TELEGRAPH RD. & I495          60   74         C C  77
1CD W 3008            55        11         3     40 40              D 86 10  12  50
1CD E 2440            55        13         3     40 40              D 86 10  85  50
ADD
1CU W 2440            55        13         3     40 40              U 86 10  12  50
1CU W 3008            55        11         3     40 40              U 86 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                              1C
  -1219.        0.      1219.       0.     0.0       33.2232    11.2776         6.
.004204120.004204120.004204120.003515849.003515849.003515849

     184.   3.442207        3.    600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              79.8576    1.5240
             110.3376    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                              1C
  -1219.        0.      1219.       0.     0.0       33.2232    11.2776         6.
.004204120.004204120.004204120.003515849.003515849.003515849

     184.   3.442207        3.    600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              79.8576    1.5240
             110.3376    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                      1C
    5448.24.63  7.7  86.   0.   5.   12. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.   62. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  112. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  162. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  262. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  362. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.  10.   12. 3    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                      1C
    5448.24.63  7.7  86.   0.   5.   12. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.   62. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  112. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  162. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  262. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.   5.  362. 3    28.00
X                                                      1C
    5448.24.63  7.7  86.   0.  10.   12. 3    28.00
```

TABLE 3

PREDICTIONS FOR TEST C, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.00	1.09	1.09	0.74	0.74	1.02	1.00
D	5	62	1.20	0.86	0.86	0.57	0.57	0.64	0.64
D	5	112	1.40	0.71	0.71	0.46	0.46	0.54	0.54
D	5	162	1.20	0.59	0.59	0.38	0.38	0.49	0.49
D	5	262	0.80	0.45	0.45	0.29	0.29	0.42	0.42
D	5	362	1.00	0.36	0.36	0.23	0.23	0.39	0.39
D	10	12	1.80	0.83	0.83	0.41	0.41	0.89	0.89
U	5	12	0.0	0.0	0.0	*****	*****	*****	*****
U	5	262	0.10	0.0	0.0	*****	*****	*****	*****
U	10	12	0.10	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST D FOR SITE 1 WAS MADE ON 2/13/74 FROM 16:30 TO 17:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.0 MPH (2.24 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.8 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 78 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2776, 58(93), 10) AND (3694, 52(84), 10).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS. TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495           60    74          C  B   50
100 W 3694            52        5          3      40 40                  0 78 10   12   50
100 E 2776            58       10          3      40 40                  0 78 10   85   50
ADD
100 E 2776            58       10          3      40 40                  0 78 10   12   50
100 W 3694            52        5          3      40 40                  0 78 10   85   50
END
```

HIWAY INPUTS. TURNER STABILITY CLASS

```
                                                  10
  -1219.          0.        1219.           0.     0.0        33.2232     11.2776         6.
.004890282.004890282.004890282.003668471.003668471.003668471

     192.   2.235199          3.     600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS. PASQUILL STABILITY CLASS

```
                                                  10
  -1219.          0.        1219.           0.     0.0        33.2232     11.2776         6.
.004890282.004890282.004890282.003668471.003668471.003668471

     192.   2.235199          2.     600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.   12.  3     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.   62.  3     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  112.  3     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  162.  3     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  262.  3     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  362.  3     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.   10.   12.  3     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.   12.  2     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.   62.  2     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  112.  2     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  162.  2     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  262.  2     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.    5.  362.  2     28.00
X                                                                  1D
    6470.22.98   5.0   78.    0.   10.   12.  2     28.00
```

TABLE 4

PREDICTIONS FOR TEST D, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.30	1.58	1.46	1.30	1.20	1.77	1.70
D	5	62	1.30	1.24	1.05	1.00	0.80	1.11	1.00
D	5	112	1.00	1.01	0.80	0.79	0.61	0.94	0.85
D	5	162	0.50	0.85	0.65	0.66	0.49	0.85	0.76
D	5	262	0.40	0.64	0.47	0.49	0.43	0.74	0.65
D	5	362	0.40	0.52	0.37	0.40	0.44	0.67	0.58
D	10	12	1.60	1.18	1.08	0.75	0.76	1.54	1.50
U	5	12	0.0	0.0	0.02	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.0	0.0	0.01	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 5 FOR SITE 1 WAS MADE ON 2/14/74 FROM 7:30 TO 8:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 1.0 MPH (0.45 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.8 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 21 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (3370, 55(88), 9) AND (3378, 54(87), 8).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495            60   74          B B  10
1ED E 3378          54          8          3        40 40                 D 21 10   12   50
1ED W 3370          55          9          3        40 40                 D 21 10   65   50
ADD
1EU W 3370          55          9          3        40 40                 U 21 10   12   50
1EU E 3378          54          8          3        40 40                 U 21 10   65   50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                              1F
   -1219.          0.        1219.           0.       0.0        33.2232    11.2776          6.
.004565828.004565828.004565828.004564233.004564233.004564233

     249.   0.447040          2.    600.0
0.001
                 3.6576     1.5240
                 3.6576     3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                              1F
   -1219.          0.        1219.           0.       0.0        33.2232    11.2776          6.
.004565828.004565828.004565828.004564233.004564233.004564233

     249.   0.447040          2.    600.0
0.001
                 3.6576     1.5240
                 3.6576     3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

NOTE, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 5

PREDICTIONS FOR TEST E, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	4.50	3.00	3.00	10.00	10.00	*****	*****
D	10	12	3.60	2.59	2.59	9.70	9.70	*****	*****
U	5	12	4.00	2.61	2.61	*****	*****	*****	*****
U	5	62	1.00	0.56	0.56	*****	*****	*****	*****
U	5	112	0.0	0.32	0.32	*****	*****	*****	*****
U	5	162	0.20	0.20	0.20	*****	*****	*****	*****
U	5	262	0.50	0.09	0.09	*****	*****	*****	*****
U	5	362	0.0	0.05	0.05	*****	*****	*****	*****
U	10	12	4.00	1.83	1.83	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST E FOR SITE 1 WAS MADE ON 2/14/74 FROM 8:30 TO 9:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.1 MPH (0.94 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 5.4 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 47 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2324, 59(95), 18) AND (2158, 58(93), 16).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
     TELEGRAPH RD. S 1495          60   74        B B  21
1FD E 2158          58        16      3      40 40          0 47 10  12  50
1FD W 2324          59        18      3      40 40          0 47 10  85  50
2DD
1FU W 2324          59        18      3      40 40          0 47 10  12  50
1FU E 2158          58        16      3      40 40          0 47 10  85  50
2DD
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  1F
   -1219.        0.      1219.        0.    0.0      33.2232   11.2776      6.
.003120851.003120851.003120851.003413183.003413183.003413183

     223.  0.938784        2.   600.0
0.001
                3.6576    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                  1F
   -1219.        0.      1219.        0.    0.0      33.2232   11.2776      6.
.003120851.003120851.003120851.003413183.003413183.003413183

     223.  0.938784        2.   600.0
0.001
                3.6576    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                 1F
     4482.25.34  2.1  47.   0.   5.  12. 2    28.00
X                                                 1F
     4482.25.34  2.1  47.   0.  10.  12. 2    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                 1F
     4482.25.34  2.1  47.   0.   5.  12. 2    28.00
X                                                 1F
     4482.25.34  2.1  47.   0.  10.  12. 2    28.00
```

TABLE 6

PREDICTIONS FOR TEST E, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	3.00	1.60	1.60	2.90	2.90	4.17	4.10
D	10	12	3.40	1.33	1.33	2.10	2.10	3.66	3.60
U	5	12	3.20	1.00	1.00	*****	*****	*****	*****
U	5	62	1.20	0.01	0.01	*****	*****	*****	*****
U	5	112	1.00	0.0	0.0	*****	*****	*****	*****
U	5	162	0.0	0.0	0.0	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	5	362	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	1.50	0.58	0.58	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST G FOR SITE 1 WAS MADE ON 11/ 1/73 FROM 15:52 TO 16:52 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 9.0 MPH (4.02 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.5 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 5 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2440, 40(64), 9) AND (4252, 38(61), 9).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   73       C C  90
1GD W 4252              38        9       3      40 40            0  5 10  18  50
1GD E 2440              40        9       3      40 40            0  5 10  91  50
ADD
1GU E 2440              40        9       3      40 40            0  5 10  12  50
1GU W 4252              38        9       3      40 40            0  5 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                      1G
  -1219.        0.     1219.        0.    0.0      33.2232   11.2776        6.
.008456096.008456096.008456096.004652184.004652184.004652184

     265.  4.023359        3.   600.0
0.001
              5.4864    1.5240
             20.7264    1.5240
             35.9664    1.5240
             51.2064    1.5240
            112.1664    1.5240
              5.4864    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                      1G
  -1219.        0.     1219.        0.    0.0      33.2232   11.2776        6.
.008456096.008456096.008456096.004652184.004652184.004652184

     265.  4.023359        3.   600.0
0.001
              5.4864    1.5240
             20.7264    1.5240
             35.9664    1.5240
             51.2064    1.5240
            112.1664    1.5240
              5.4864    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
P
P   6692.34.03  9.0  5.  0.  5.  18. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5.  68. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5. 118. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5. 168. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5. 368. 3  1G 28.00  4000.  109.
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
P
P   6692.34.03  9.0  5.  0.  5.  18. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5.  68. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5. 118. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5. 168. 3  1G 28.00  4000.  109.
P   6692.34.03  9.0  5.  0.  5. 368. 3  1G 28.00  4000.  109.
    6692.34.03  9.0  5.  0. 10.  18. 3  1G 28.00  4000.  109.
```

TABLE 7

PREDICTIONS FOR TEST G, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	18	4.20	3.48	3.48	2.40	2.40	7.29	7.20
D	5	68	1.60	1.87	1.87	1.40	1.40	5.68	5.60
D	5	118	1.80	1.21	1.21	1.00	1.00	4.22	4.20
D	5	168	0.60	0.88	0.88	0.89	0.89	3.04	3.00
D	5	368	0.0	0.37	0.37	0.42	0.42	0.68	0.68
D	10	18	1.90	2.97	2.97	2.30	2.30	6.54	6.50
U	5	12	2.60	2.48	2.48	*****	*****	*****	*****
U	5	212	0.70	0.27	0.27	*****	*****	*****	*****
U	10	12	2.20	2.02	2.02	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST H FOR SITE 1 WAS MADE ON 11/ 2/73 FROM 7:50 TO 8:50 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 0.4 MPH (0.18 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 3.3 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 35 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (3340, 62(**), 8) AND (2876, 51(82), 13).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          TELEGRAPH RD. & I495          60   73      B B   4
1HD W 2876                51       13       3      40 40          D 35 10  18  50
1HD E 3340                62        8       3      40 40          D 35 10  91  50
ADD
1HU E 3340                62        8       3      40 40          U 35 10  12  50
1HU W 2876                51       13       3      40 40          U 35 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        1H
   -1219.        0.      1219.         0.     0.0      33.2232   11.2776        6.
.004766256.004766256.004766256.004456725.004456725.004456725

     235.  0.178816         2.   600.0
0.001
                5.4864    1.5240
               20.7264    1.5240
               35.9664    1.5240
               81.6864    1.5240
              112.1664    1.5240
                5.4864    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        1H
   -1219.        0.      1219.         0.     0.0      33.2232   11.2776        6.
.004766256.004766256.004766256.004456725.004456725.004456725

     235.  0.178816         2.   600.0
0.001
                5.4864    1.5240
               20.7264    1.5240
               35.9664    1.5240
               81.6864    1.5240
              112.1664    1.5240
                5.4864    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

1H, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 8

PREDICTIONS FOR TEST H, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	18	2.70	3.07	3.07	22.00	22.00	*****	*****
D	5	68	0.70	2.11	2.11	15.00	15.00	*****	*****
D	5	118	0.20	1.54	1.54	12.00	12.00	*****	*****
D	5	268	0.10	0.85	0.85	9.00	9.00	*****	*****
D	5	368	0.0	0.66	0.66	8.00	8.00	*****	*****
D	10	18	2.70	2.61	2.61	19.00	19.00	*****	*****
U	5	12	2.50	2.13	2.13	*****	*****	*****	*****
U	10	12	2.40	1.35	1.35	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 1 FOR SITE 1 WAS MADE ON 3/28/73 FROM 15:30 TO 16:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 10.8 MPH (4.83 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.6 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 14 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (3672, 55(88), 9) AND (2776, 55(88), 12).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74        R C 108
LID E 2776              55      12        3      40 40              D 14 10  12  40
LID W 3672              55       9        3      40 40              D 14 10  85  40
ADD
LID E 2776              55      12        3      40 40              D 14 10  12  34
LID W 3672              55       9        3      40 40              D 14 10  85  34
ADD
LID W 3672              55       9        3      40 40              U 14 10  12  50
LID E 2776              55      12        3      40 40              U 14 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        11
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.003939930.003939930.003939930.004973251.004973251.004973251

     256.  4.828031        2.   600.0
0.001
               3.6576    1.5240
              15.8496    1.5240
              28.0416    1.5240
              40.2336    1.5240
              55.4736    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        11
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.003939930.003939930.003939930.004973251.004973251.004973251

     256.  4.828031        3.   600.0
0.001
               3.6576    1.5240
              15.8496    1.5240
              28.0416    1.5240
              40.2336    1.5240
              55.4736    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X    6448.24.03 10.8  14.   0.   5.  12. 2   1I  28.00
X    6448.24.03 10.8  14.   0.   5.  52. 2   1I  28.00
X    6448.24.03 10.8  14.   0.   5.  92. 2   1I  28.00
X    6448.24.03 10.8  14.   0.   5. 132. 2   1I  28.00
X    6448.24.03 10.8  14.   0.   5. 182. 2   1I  28.00
     6448.24.03 10.8  14.   0.  10.  12. 2   1I  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X    6448.24.03 10.8  14.   0.   5.  12. 3   1I  28.00
X    6448.24.03 10.8  14.   0.   5.  52. 3   1I  28.00
X    6448.24.03 10.8  14.   0.   5.  92. 3   1I  28.00
X    6448.24.03 10.8  14.   0.   5. 132. 3   1I  28.00
X    6448.24.03 10.8  14.   0.   5. 182. 3   1I  28.00
     6448.24.03 10.8  14.   0.  10.  12. 3   1I  28.00
```

TABLE 9

PREDICTIONS FOR TEST 1, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	0.90	1.11	1.82	0.95	1.40	3.34	3.40
D	5	52	0.40	0.77	1.30	0.57	0.94	2.11	2.20
D	5	92	0.20	0.55	0.94	0.44	0.75	1.76	1.90
D	5	132	0.10	0.43	0.74	0.37	0.64	1.57	1.70
D	5	182	0.0	0.33	0.59	0.31	0.56	1.42	1.60
D	10	12	0.90	0.98	1.59	0.89	1.20	2.93	3.00
U	5	12	1.40	1.21	1.47	*****	*****	*****	*****
U	5	112	0.40	0.21	0.13	*****	*****	*****	*****
U	5	362	0.0	0.04	0.02	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST J FOR SITE 1 WAS MADE ON 3/28/73 FROM 16:30 TO 17:63 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 10.4 MPH (4.65 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.7 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 25 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (4944, 52(84), 8) AND (2966, 52(84), 11).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74       C C 104
1JD E 2966              52      11       3      40 40              D 25 10  12  40
1JD W 4944              52       8       3      40 40              D 25 10  85  40
ADD
1JD E 2966              52      11       3      40 40              D 25 10  12 237
1JD W 4944              52       8       3      40 40              D 25 10  85 237
ADD
1JU W 4944              52       8       3      40 40              U 25 10  12  50
1JU E 2966              52      11       3      40 40              U 25 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        1J
   -1219.        0.      1219.        0.    0.0      33.2232   11.2776        6.
.004328594.004328594.004328594.006880194.006880194.006880194

     245.  4.649215        3.   600.0
0.001
              3.6576    1.5240
             15.8496    1.5240
             28.0416    1.5240
             40.2336    1.5240
             75.8952    1.5240
              3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        1J
   -1219.        0.      1219.        0.    0.0      33.2232   11.2776        6.
.004328594.004328594.004328594.006880194.006880194.006880194

     245.  4.649215        3.   600.0
0.001
              3.6576    1.5240
             15.8496    1.5240
             28.0416    1.5240
             40.2336    1.5240
             75.8952    1.5240
              3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.   12. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.   52. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.   92. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.  132. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.  249. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.   10.   12. 3     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.   12. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.   52. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.   92. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.  132. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.    5.  249. 3     28.00
X                                                                  1J
     7910.24.63 10.4   25.    0.   10.   12. 3     28.00
```

TABLE 10

PREDICTIONS FOR TEST 1, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.60	1.94	1.94	1.40	1.40	2.58	2.50
D	5	52	0.90	1.52	1.52	1.00	1.00	1.70	1.70
D	5	92	0.40	1.18	1.18	0.90	0.90	1.45	1.40
D	5	132	0.20	0.96	0.96	0.79	0.79	1.31	1.30
D	5	249	0.10	0.63	0.63	0.63	0.63	1.09	1.00
D	10	12	2.40	1.70	1.70	1.20	1.20	2.25	2.20
U	5	12	0.40	1.43	1.43	*****	*****	*****	*****
U	5	112	0.20	0.02	0.02	*****	*****	*****	*****
U	5	362	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 6 FOR SITE 1 WAS MADE ON 5/ 2/74 FROM 14:15 TO 15:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.9 MPH (1.74 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 5.7 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 12 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1964, 61(98), 13) AND (1824, 61(98), 15).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          TELEGRAPH RD. & I495            60    74         D B   39
1KD E 1824              61      15         3      40 40                D 12 10  12  50
1KD W 1964              61      13         3      40 40                D 12 10  85  50
ADD
1KU W 1964              61      13         3      40 40                U 12 10  12  50
1KU E 1824              61      15         3      40 40                U 12 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                          1K
   -1219.          0.       1219.         0.       0.0       33.2232      11.2776          6.
.002503223.002503223.002503223.002616767.002616767.002616767

     258.   1.743455           4.     600.0
0.001
              3.6576     1.5240
             34.1376     1.5240
            110.3376     1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                          1K
   -1219.          0.       1219.         0.       0.0       33.2232      11.2776          6.
.002503223.002503223.002503223.002616767.002616767.002616767

     258.   1.743455           2.     600.0
0.001
              3.6576     1.5240
             34.1376     1.5240
            110.3376     1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
P                                                  1K
    3788.23.49   3.9   12.    0.    5.   12. 4     28.00     4000.      109.
P                                                  1K
    3788.23.49   3.9   12.    0.    5.  112. 4     28.00     4000.      109.
P                                                  1K
    3788.23.49   3.9   12.    0.    5.  362. 4     28.00     4000.      109.
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
P                                                  1K
    3788.23.49   3.9   12.    0.    5.   12. 2     28.00     4000.      109.
P                                                  1K
    3788.23.49   3.9   12.    0.    5.  112. 2     28.00     4000.      109.
P                                                  1K
    3788.23.49   3.9   12.    0.    5.  362. 2     28.00     4000.      109.
```

TABLE 11

PREDICTIONS FOR TEST K, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	0.60	3.09	1.18	3.60	1.50	8.01	5.80
D	5	112	0.10	1.54	0.49	2.00	0.63	3.77	4.00
D	5	362	0.0	0.63	0.17	1.30	0.31	0.21	1.30
U	5	12	1.30	1.56	1.20	*****	*****	*****	*****
U	5	62	0.90	0.15	0.36	*****	*****	*****	*****
U	5	112	0.50	0.05	0.24	*****	*****	*****	*****
U	5	162	0.40	0.02	0.16	*****	*****	*****	*****
U	5	262	0.30	0.01	0.08	*****	*****	*****	*****
U	5	362	0.30	0.0	0.05	*****	*****	*****	*****
U	10	12	1.70	1.08	0.87	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST L FOR SITE 1 WAS MADE ON 5/ 2/74 FROM 15:15 TO 16:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.5 MPH (1.56 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 5.6 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 10 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2618, 59(95), 11) AND (3518, 59(95), 8).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74      D B  35
ILO W 3518              59      8      3     40 40          D 10 10  12  50
ILO E 2618              59     11      3     40 40          D 10 10  85  50
ADD
ILU E 2618              59     11      3     40 40          U 10 10  12  50
ILU W 3518              59      8      3     40 40          U 10 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        1L
   -1219.        0.     1219.        0.    0.0      33.2232   11.2776        6.
.00444509 .00444509 .00444509 .00346903 .00346903 .00346903

     260.  1.564639        4.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             34.1376    1.5240
             49.3776    1.5240
             79.8576    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        1L
   -1219.        0.     1219.        0.    0.0      33.2232   11.2776        6.
.00444509 .00444509 .00444509 .00346903 .00346903 .00346903

     260.  1.564639        2.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             34.1376    1.5240
             49.3776    1.5240
             79.8576    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
P                                                                  1L
    6136.22.42  3.5  10.  0.  5.  12. 4    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5.  62. 4    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 112. 4    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 162. 4    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 262. 4    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 362. 4    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0. 10.  12. 4    28.00     4000.      109.
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
P                                                                  1L
    6136.22.42  3.5  10.  0.  5.  12. 2    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5.  62. 2    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 112. 2    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 162. 2    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 262. 2    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0.  5. 362. 2    28.00     4000.      109.
P                                                                  1L
    6136.22.42  3.5  10.  0. 10.  12. 2    28.00     4000.      109.
```

TABLE 12

PREDICTIONS FOR TEST L, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.70	5.57	1.99	7.10	2.70	13.80	10.00
D	5	62	1.40	3.62	1.20	4.60	1.40	9.97	8.50
D	5	112	0.80	2.54	0.79	3.70	1.00	6.49	6.90
D	5	162	0.60	1.95	0.58	3.30	0.86	3.95	5.60
D	5	262	0.40	1.32	0.37	2.70	0.63	1.27	3.60
D	5	362	0.30	0.96	0.26	2.20	0.50	0.36	2.30
D	10	12	2.30	4.67	1.71	6.10	2.50	11.86	8.90
U	5	12	0.60	2.58	1.79	*****	*****	*****	*****
U	5	112	0.10	0.15	0.41	*****	*****	*****	*****
U	5	362	0.0	0.01	0.10	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST M FOR SITE 1 WAS MADE ON 5/ 2/74 FROM 16:15 TO 17:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS). RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.9 MPH (1.30 M/S). AND THE BACKGROUND CO CONCENTRATION WAS 4.4 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 4 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2610, 60(97), 9) AND (3468, 60(97), 6).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
         TELEGRAPH RD. & I495          60   74      D B  29
1MD W 3468              60        6       3      40 40          D  4 10  12  50
1MD E 2610              60        9       3      40 40          D  4 10  85  50
ADD
1MU E 2610              60        9       3      40 40          U  4 10  12  50
1MU W 3468              60        6       3      40 40          U  4 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                1M
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.004186418.004186418.004186418.003309287.003309287.003309287

     266.  1.296415        4.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                1M
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.004186418.004186418.004186418.003309287.003309287.003309287

     266.  1.296415        2.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
P
P   6078.21.44  2.9  4.  0.  5.  12. 4  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5.  62. 4  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 112. 4  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 162. 4  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 262. 4  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 362. 4  1M 28.00  4000.  109.
    6078.21.44  2.9  4.  0. 10.  12. 4  1M 28.00  4000.  109.
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
P
P   6078.21.44  2.9  4.  0.  5.  12. 2  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5.  62. 2  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 112. 2  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 162. 2  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 262. 2  1M 28.00  4000.  109.
P   6078.21.44  2.9  4.  0.  5. 362. 2  1M 28.00  4000.  109.
    6078.21.44  2.9  4.  0. 10.  12. 2  1M 28.00  4000.  109.
```

TABLE 13

PREDICTIONS FOR TEST M, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.40	6.21	1.96	9.10	2.20	15.78	11.00
D	5	62	2.30	3.29	1.12	5.40	1.20	11.40	9.70
D	5	112	1.40	2.06	0.74	4.10	1.00	7.42	7.90
D	5	162	1.20	1.44	0.55	3.20	0.88	4.52	6.50
D	5	262	0.90	0.85	0.34	1.90	0.64	1.46	4.20
D	5	362	0.70	0.57	0.22	1.00	0.42	0.41	2.60
D	10	12	3.20	5.29	1.68	8.50	2.10	13.56	10.00
U	5	12	1.10	4.25	1.93	*****	*****	*****	*****
U	5	112	0.20	0.72	0.53	*****	*****	*****	*****
U	5	362	0.0	0.10	0.15	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST N FOR SITE 1 WAS MADE ON 5/30/74 FROM 9:15 TO 10:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.0 MPH (1.34 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.6 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 16 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1296, 55(88), 15) AND (1350, 55(88), 19).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74      D B  30
IND E 1350              55      19      3     40 40          D 16 10  12  50
IND W 1296              55      15      3     40 40          D 16 10  85  50
ADD
INU W 1296              55      15      3     40 40          U 16 10  12  50
INU E 1350              55      19      3     40 40          U 16 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        IN
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.002120507.002120507.002120507.001923518.001923518.001923518

     254.  1.341120        4.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              64.6176    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        IN
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.002120507.002120507.002120507.001923518.001923518.001923518

     254.  1.341120        2.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              64.6176    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.   12. 4     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.   62. 4     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.  112. 4     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.  162. 4     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.  212. 4     28.00
X                                                                  1N
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.   12. 2     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.   62. 2     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.  112. 2     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.  162. 2     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.    5.  212. 2     28.00
X                                                                  1N
      2646.26.56   3.0   16.    0.   10.   12. 2     28.00
```

TABLE 14

PREDICTIONS FOR TEST N, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.90	2.38	1.06	3.10	1.60	5.18	4.70
D	5	62	1.30	1.76	0.68	2.20	0.90	3.44	2.80
D	5	112	1.10	1.31	0.46	1.80	0.60	2.97	2.30
D	5	162	0.70	1.05	0.35	1.50	0.50	2.71	2.10
D	5	212	0.90	0.88	0.28	1.40	0.40	2.53	1.90
D	10	12	2.00	1.97	0.91	2.50	1.50	4.45	4.20
U	5	12	3.40	0.97	0.94	*****	*****	*****	*****
U	5	112	0.20	0.01	0.16	*****	*****	*****	*****
U	5	262	0.0	0.0	0.05	*****	*****	*****	*****
U	5	362	0.20	0.0	0.03	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 0 FOR SITE 1 WAS MADE ON 5/29/74 FROM 10:15 TO 11:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.3 MPH (1.48 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.8 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 33 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1332, 57(92), 15) AND (1360, 57(92), 19).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74      D B  33
100 E 1360              57      19      3     40 40              D 33 10  12  50
100 W 1332              57      15      3     40 40              D 33 10  85  50
ADD
100 W 1332              57      15      3     40 40              U 33 10  12  50
100 E 1360              57      19      3     40 40              U 33 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                10
   -1219.        0.      1219.         0.     0.0      33.2232   11.2776        6.
.002078804.002078804.002078804.001923819.001923819.001923819

     237.  1.475231         4.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               64.6176    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                10
   -1219.        0.      1219.         0.     0.0      33.2232   11.2776        6.
.002078804.002078804.002078804.001923819.001923819.001923819

     237.  1.475231         2.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               64.6176    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.   12.  4     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.   62.  4     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.  112.  4     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.  162.  4     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.  212.  4     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.   10.   12.  4     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.   12.  2     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.   62.  2     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.  112.  2     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.  162.  2     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.    5.  212.  2     28.00
X
                                                                  10
     2692.25.84   3.3   33.   0.   10.   12.  2     28.00
```

TABLE 15

PREDICTIONS FOR TEST Q, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.30	1.39	0.95	1.70	1.30	2.36	2.10
D	5	62	0.80	1.20	0.67	1.30	0.85	1.57	1.30
D	5	112	0.20	0.98	0.48	1.20	0.67	1.35	1.00
D	5	162	0.10	0.82	0.38	1.20	0.58	1.23	0.96
D	5	212	0.20	0.71	0.31	1.10	0.52	1.15	0.88
D	10	12	1.20	1.11	0.81	1.10	1.00	2.03	1.90
U	5	12	2.70	0.59	0.67	*****	*****	*****	*****
U	5	112	0.0	0.0	0.03	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	5	362	0.10	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST P FOR SITE 1 WAS MADE ON 5/29/74 FROM 11:15 TO 12:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.9 MPH (1.74 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.1 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 21 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1744, 59(95), 9) AND (1238, 59(95), 22).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74       D R  39
1PD F 1238              59       22       3      40 40              D 21 10  12  50
1PD W 1744              59        9       3      40 40              D 21 10  85  50
ADD
1PU W 1744              59        9       3      40 40              U 21 10  12  50
1PU E 1238              59       22       3      40 40              U 21 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        1P
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.001919793.001919793.001919793.002239371.002239371.002239371

     249.  1.743455        4.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              64.6176    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        1P
   -1219.        0.     1219.         0.    0.0      33.2232   11.2776        6.
.001919793.001919793.001919793.002239371.002239371.002239371

     249.  1.743455        2.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              64.6176    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.   12.  4    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.   62.  4    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.  112.  4    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.  162.  4    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.  212.  4    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.   10.   12.  4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.   12.  2    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.   62.  2    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.  112.  2    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.  162.  2    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.    5.  212.  2    28.00
X
                                                          1P
      2982.24.24   3.9   21.    0.   10.   12.  2    28.00
```

TABLE 16

PREDICTIONS FOR TEST P, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.20	1.82	0.94	2.00	1.20	3.15	2.90
D	5	62	1.60	1.43	0.63	1.50	0.73	2.09	1.70
D	5	112	1.30	1.11	0.44	1.30	0.56	1.81	1.40
D	5	162	1.90	0.91	0.34	1.10	0.47	1.65	1.20
D	5	212	0.80	0.77	0.27	1.00	0.42	1.54	1.10
D	10	12	2.10	1.52	0.82	1.50	1.10	2.71	2.50
U	5	12	0.40	0.82	0.89	*****	*****	*****	*****
U	5	262	0.20	0.0	0.03	*****	*****	*****	*****
U	5	362	0.0	0.0	0.02	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST Q FOR SITE 1 WAS MADE ON 7/25/74 FROM 8:45 TO 9:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND D. RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.6 MPH (1.61 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.3 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 50 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2150, 55(88), 18) AND (2152, 55(88), 19).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74      D D  36
100 E 2152              55      19      3     40 40              D 50 10  12  50
100 W 2150              55      18      3     40 40              D 50 10  85  50
ADD
100 W 2150              55      18      3     40 40              U 50 10  12  50
100 E 2152              55      19      3     40 40              U 50 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                10
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.003380246.003380246.003380246.003330584.003330584.003330584

     220.  1.609344         4.    600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              79.8576    1.5240
             110.3376    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                10
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.003380246.003380246.003380246.003330584.003330584.003330584

     220.  1.609344         4.    600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              79.8576    1.5240
             110.3376    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.   12.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.   62.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  112.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  162.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  262.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  362.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.  10.   12.  4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.   12.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.   62.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  112.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  162.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  262.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.   5.  362.  4    28.00
X                                                                  1Q
    4302.27.11   3.6   50.   0.  10.   12.  4    28.00
```

TABLE 17

PREDICTIONS FOR TEST 9, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.30	1.75	1.75	2.10	2.10	2.58	2.50
D	5	62	1.30	1.55	1.55	1.60	1.60	1.71	1.70
D	5	112	1.00	1.31	1.31	1.40	1.40	1.48	1.40
D	5	162	0.80	1.14	1.14	1.20	1.20	1.35	1.30
D	5	262	0.70	0.90	0.90	1.20	1.20	1.20	1.20
D	5	362	0.70	0.74	0.74	1.40	1.40	1.10	1.10
D	10	12	2.30	1.40	1.40	1.10	1.10	2.21	2.20
U	5	12	0.90	0.63	0.63	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST R FOR SITE 1 WAS MADE ON 7/25/74 FROM 9:45 TO 10:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND D, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.6 MPH (1.61 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.8 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 50 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2012, 56(90), 20) AND (1832, 56(90), 16).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74       D D  36
1RD E 1832              56       16       3     40 40              D 50 10  12  50
1RD W 2012              56       20       3     40 40              D 50 10  85  50
ADD
1RU W 2012              56       20       3     40 40              U 50 10  12  50
1RU E 1832              56       16       3     40 40              U 50 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        1R
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.002720956.002720956.002720956.003160055.003160055.003160055

     220.  1.609344         4.    600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              79.8576    1.5240
             110.3376    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        1R
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.002720956.002720956.002720956.003160055.003160055.003160055

     220.  1.609344         4.    600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              34.1376    1.5240
              49.3776    1.5240
              79.8576    1.5240
             110.3376    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.   12. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.   62. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  112. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  162. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  262. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  362. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.  10.   12. 4     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.   12. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.   62. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  112. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  162. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  262. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.   5.  362. 4     28.00
X                                                                    1R
     3844.26.59  3.6  50.   0.  10.   12. 4     28.00
```

TABLE 18

PREDICTIONS FOR TEST R, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.00	1.52	1.52	1.80	1.80	2.26	2.20
D	5	62	1.20	1.34	1.34	1.40	1.40	1.50	1.50
D	5	112	1.00	1.14	1.14	1.20	1.20	1.30	1.30
D	5	162	0.80	0.99	0.99	1.00	1.00	1.18	1.10
D	5	262	0.40	0.78	0.78	1.10	1.10	1.05	1.00
D	5	362	0.30	0.65	0.65	1.20	1.20	0.97	0.97
D	10	12	1.80	1.25	1.25	1.00	1.00	1.94	1.90
U	5	12	0.70	0.60	0.60	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST S FOR SITE 1 WAS MADE ON 7/25/74 FROM 10:45 TO 11:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND D, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.2 MPH (1.43 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.1 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 50 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2272, 57(92), 17) AND (1798, 57(92), 17).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        TELEGRAPH RD. & I495          60   74        D D  32
150 E 1798              57      17      3      40 40              0 50 10  12  50
150 W 2272              57      17      3      40 40              0 50 10  85  50
AND
150 W 2272              57      17      3      40 40              0 50 10  12  50
150 E 1798              57      17      3      40 40              0 50 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        1S
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.002672585.002672585.002672585.003377148.003377148.003377148

     220.  1.430528        4.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
                3.6576    3.0480
9999.
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        1S
   -1219.        0.      1219.        0.     0.0      33.2232   11.2776        6.
.002672585.002672585.002672585.003377148.003377148.003377148

     220.  1.430528        4.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
                3.6576    3.0480
9999.
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                          1S
    4070.25.84   3.2   50.   0.   5.   12.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.   62.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.  112.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.  162.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.  262.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.  10.   12.  4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                          1S
    4070.25.84   3.2   50.   0.   5.   12.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.   62.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.  112.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.  162.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.   5.  262.  4    28.00
X                                                          1S
    4070.25.84   3.2   50.   0.  10.   12.  4    28.00
```

TABLE 19

PREDICTIONS FOR TEST S, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.30	1.63	1.63	2.00	2.00	2.61	2.60
D	5	62	0.60	1.44	1.44	1.60	1.60	1.74	1.70
D	5	112	0.50	1.22	1.22	1.40	1.40	1.50	1.50
D	5	162	0.30	1.06	1.06	1.20	1.20	1.37	1.30
D	5	262	0.20	0.84	0.84	1.20	1.20	1.21	1.20
D	10	12	1.20	1.36	1.36	1.10	1.10	2.25	2.20
U	5	12	0.70	0.67	0.67	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST I FOR SITE 1 WAS MADE ON 7/25/74 FROM 11:45 TO 12:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND D, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 3.2 MPH (1.43 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.1 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 50 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1998, 60(97), 16) AND (1898, 60(97), 19).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
         TELEGRAPH RD. & I495                 60   74        D D  32
1TD F 1898              60        19          3       40 40
1TD W 1998              60        16          3       40 40            D 50 10  12  50
ADD                                                                     D 50 10  85  50
1TU W 1998              60        16          3       40 40
1TU F 1898              60        19          3       40 40            U 50 10  12  50
END                                                                     U 50 10  85  50
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                              1T
   -1219.           0.      1219.           0.     0.0        33.2232     11.2776          6.
.002790988.002790988.002790988.002816621.002816621.002816621
     220.   1.430528          4.     600.0
0.001
                3.6576     1.5240
               79.8576     1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                              1T
   -1219.           0.      1219.           0.     0.0        33.2232     11.2776          6.
.002790988.002790988.002790988.002816621.002816621.002816621
     220.   1.430528          4.     600.0
0.001
                3.6576     1.5240
               79.8576     1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                     1T
    3896.25.02   3.2   50.    0.    5.  12.  4     28.00
X                                                    1T
    3896.25.02   3.2   50.    0.    5. 262.  4     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                     1T
    3896.25.02   3.2   50.    0.    5.  12.  4     28.00
X                                                    1T
    3896.25.02   3.2   50.    0.    5. 262.  4     28.00
```

TABLE 20

PREDICTIONS FOR TEST I, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	0.30	1.53	1.53	1.90	1.90	2.42	2.40
D	5	262	0.0	0.78	0.78	1.10	1.10	1.12	1.10
U	5	12	1.40	0.56	0.56	*****	*****	*****	*****
U	5	62	0.60	0.0	0.0	*****	*****	*****	*****
U	5	112	0.50	0.0	0.0	*****	*****	*****	*****
U	5	162	0.30	0.0	0.0	*****	*****	*****	*****
U	5	262	0.20	0.0	0.0	*****	*****	*****	*****
U	5	362	0.20	0.0	0.0	*****	*****	*****	*****
U	10	12	1.40	0.30	0.30	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST U FOR SITE 1 WAS MADE ON 7/25/74 FROM 12:45 TO 13:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 4.0 KILOFEET (1.2 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND D, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 4.4 MPH (1.97 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.1 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 60 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2058, 58(93), 16) AND (1852, 58(93), 19).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          TELEGRAPH RD. & I495          60   74       D D  44
1UD F 1852              58        19        3      40 40                D 60 10  12  50
1UD W 2058              58        16        3      40 40                D 60 10  85  50
ADD
1UU W 2058              58        16        3      40 40                U 60 10  12  50
1UU E 1852              58        19        3      40 40                U 60 10  85  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  10
   -1219.          0.       1219.          0.     0.0       33.2232   11.2776          6.
.002793774.002793774.002793774.002976233.002976233.002976233

     210.  1.966975          4.    600.0
0.001
                3.6576     1.5240
               18.8976     1.5240
               34.1376     1.5240
               49.3776     1.5240
               79.8576     1.5240
              110.3376     1.5240
                3.6576     3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                  10
   -1219.          0.       1219.          0.     0.0       33.2232   11.2776          6.
.002793774.002793774.002793774.002976233.002976233.002976233

     210.  1.966975          4.    600.0
0.001
                3.6576     1.5240
               18.8976     1.5240
               34.1376     1.5240
               49.3776     1.5240
               79.8576     1.5240
              110.3376     1.5240
                3.6576     3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  1U
    3910.25.65  4.4  60.   0.   5.  12. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5.  62. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 112. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 162. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 262. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 362. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.  10.  12. 4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  1U
    3910.25.65  4.4  60.   0.   5.  12. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5.  62. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 112. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 162. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 262. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.   5. 362. 4    28.00
X                                                                  1U
    3910.25.65  4.4  60.   0.  10.  12. 4    28.00
```

TABLE 21

PREDICTIONS FOR TEST U, SITE 1

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	3.20	1.28	1.28	1.30	1.30	1.60	1.60
D	5	62	1.00	1.12	1.12	1.00	1.00	1.07	1.00
D	5	112	0.50	0.96	0.96	0.88	0.88	0.92	0.92
D	5	162	0.40	0.84	0.84	0.75	0.75	0.84	0.84
D	5	262	0.30	0.67	0.67	0.58	0.58	0.74	0.74
D	5	362	0.0	0.56	0.56	0.47	0.47	0.69	0.69
D	10	12	1.70	1.03	1.03	0.69	0.69	1.38	1.30
U	5	12	0.70	0.28	0.28	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TABLE 22

DOWNWIND ANALYSIS, SITE 1

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	117.00	117.00	104.00	117.00
AVG DEVATION	0.14	-0.22	1.52	1.25
AVG SQRD DEV	1.07	0.79	9.30	12.93
PROBLE ERROR	0.69	0.60	2.04	2.41
% CORR COEF	0.53	0.60	0.50	0.32
A, OB=A*P+B	0.56	1.01	0.15	0.10
B, OB=A*P+B	0.49	0.20	0.77	1.03
MINIMUM DEV	-4.71	-4.71	-1.61	-2.45
MAXIMUM DEV	3.81	1.41	13.38	20.05
DEVATN RANGE	8.52	6.12	14.99	22.50
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	6.50	6.50	4.20	6.50
OBSATN RANGE	6.50	6.50	4.20	6.50
SUM DEVATION	16.74	-25.21	157.99	146.76
SUM SQRD DEV	125.50	93.00	967.65	1513.26
AVG OBSATION	1.28	1.28	1.17	1.28
AVG PREDTION	1.42	1.06	2.69	2.53
VAR DEVATION	1.06	0.75	7.06	11.46
VAR PREDTION	1.06	0.41	8.92	12.79
VAR OBSRVATN	1.18	1.18	0.80	1.18
AVG D/AVG OB	0.11	-0.17	1.30	0.98
AVG P/AVG OB	1.11	0.83	2.30	1.98
MIN D/AVG OB	-3.68	-3.68	-1.38	-1.91
MAX D/AVG OB	2.98	1.10	11.43	15.66
RNG D/RNG OB	1.31	0.94	3.57	3.46

TABLE 23

UPWIND ANALYSIS, SITE 1

STATISTICS	VAI	VAP
DATA POINTS	78.00	78.00
AVG DEVATION	-0.35	-0.37
AVG SQRD DEV	1.00	0.84
PROBLE ERROR	0.67	0.62
% CORR COEF	0.56	0.66
A, OB=A*P+B	0.78	1.13
B, OB=A*P+B	0.45	0.31
MINIMUM DEV	-3.94	-3.94
MAXIMUM DEV	3.15	1.19
DEVATN RANGE	7.09	5.13
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	4.40	4.40
OBSATN RANGE	4.40	4.40
SUM DEVATION	-27.22	-29.05
SUM SQRD DEV	77.87	65.74
AVG OBSATION	0.82	0.82
AVG PREDTION	0.47	0.45
VAR DEVATION	0.89	0.71
VAR PREDTION	0.63	0.42
VAR OBSRVATN	1.25	1.25
AVG D/AVG OB	-0.43	-0.45
AVG P/AVG OB	0.57	0.55
MIN D/AVG OB	-4.81	-4.81
MAX D/AVG OB	3.85	1.45
RNG D/RNG OB	1.61	1.17

TABLE 23

UPWIND AND DOWNWIND ANALYSIS, SITE 1

STATISTICS	VAT	VAP
DATA POINTS	195.00	195.00
AVG DEVATION	-0.05	-0.28
AVG SQRD DEV	1.04	0.81
PROBLE ERROR	0.68	0.60
% CORR COEF	0.56	0.64
A, OB=A*P+B	0.59	1.00
B, OB=A*P+B	0.48	0.28
MINIMUM DEV	-4.71	-4.71
MAXIMUM DEV	3.81	1.41
DEVATN RANGE	8.52	6.12
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	6.50	6.50
OBSATN RANGE	6.50	6.50
SUM DEVATION	-10.48	-54.26
SUM SQRD DEV	203.37	158.74
AVG OBSATION	1.10	1.10
AVG PREDTION	1.04	0.82
VAR DEVATION	1.05	0.74
VAR PREDTION	1.10	0.51
VAR OBSRVATN	1.25	1.25
AVG D/AVG OB	-0.05	-0.25
AVG P/AVG OB	0.95	0.75
MIN D/AVG OB	-4.30	-4.30
MAX D/AVG OB	3.48	1.29
RNG D/RNG OB	1.31	0.94

SITE 2, DATA, RESULTS, AND PERFORMANCE STATISTICS

This section describes the physical characteristics of Site 2; details the observed meteorological, traffic, and receptor location parameters for each of the 2 sampling periods; lists the inputs used with the AIRPOL-4, HIWAY, and CALAIR prediction models for each of the sampling intervals; lists the actual and predicted CO levels at each receptor location for each of the sampling intervals; lists the actual and predicted CO levels at each receptor location for each of the sampling intervals; and presents the performance statistics of the Virginia (Turner and Pasquill) and California and EPA (Turner only) prediction models for the total Site 2 data set. Tables 25 and 26 present the observed and predicted CO levels for sampling periods A and B, respectively. Tables 27, 28, and 29 present the downwind, upwind, and upwind and downwind performance statistics, respectively, of the prediction models relative to the total Site 2 data set.

Site 2, Figure 2, is located on Interstate 64 near North Hampton Boulevard in Norfolk, Virginia (Kempsville Quadrangle, Virginia, UTM coordinates 4,081,070 m N by 393,460 m E). I-64 at this location is an at-grade, six-lane, dual-divided facility with a 60-foot (18.3-m) median. The highway runs approximately north and south. The land use in the area is primarily agricultural. There is a two-story school building about 500 feet (150 m) east of the highway and a four-story school building about 850 feet (250 m) west of the highway. The nearest external pollutant source of any significance is North Hampton Boulevard, located about 1,700 feet (500 m) north of the site.

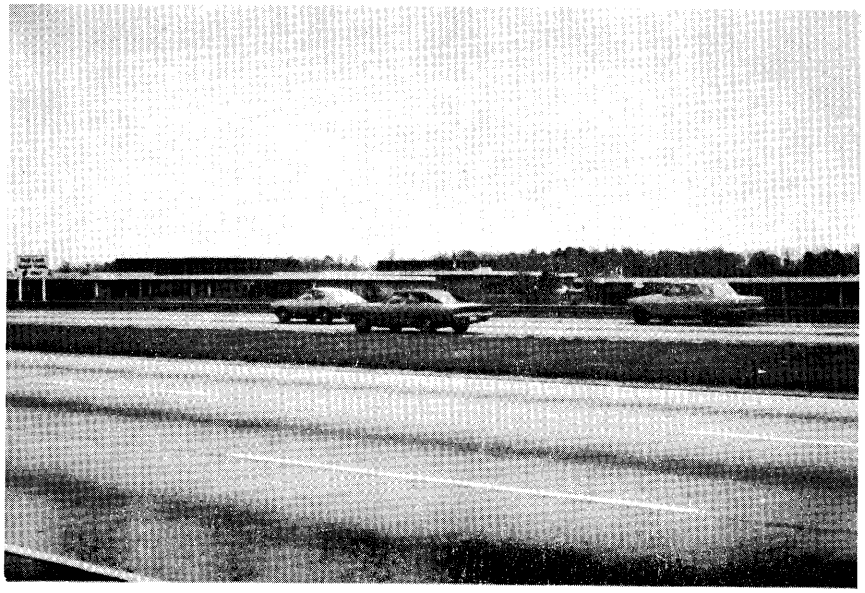

Figure 2. Site 2, an at-grade site located on Interstate 64 near Hampton Boulevard in Norfolk, Virginia.

TEST A FOR SITE 2 WAS MADE ON 7/ 3/73 FROM 7:30 TO 8:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 1.2 AND 0.5 KILOFEET (0.4 AND 0.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 4.2 MPH (1.88 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.1 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 20 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2340, 51(82), 5) AND (2850, 51(82), 5).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
       NORTHAMPTON BLVD. & I64         60   73        B B  42
2AD N 2850          51        5         3     12  5              D 20 10  13  50
2AD S 2340          51        5         3     12  5              D 20 10 109  50
ADD
2AU S 2340          51        5         3     12  5              U 20 10  10  50
2AU N 2850          51        5         3     12  5              U 20 10 106  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                           2A
     -366.        0.       152.           0.      0.0        40.2336     18.2880          6.
.004226837.004226837.004226837.003470457.003470457.003470457

      250.   1.877567          2.    600.0
0.001
                   3.9624     1.5240
                  19.2024     1.5240
                  34.4424     1.5240
                  49.6824     1.5240
                   3.9624     3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                           2A
     -366.        0.       152.           0.      0.0        40.2336     18.2880          6.
.004226837.004226837.004226837.003470457.003470457.003470457

      250.   1.877567          2.    600.0
0.001
                   3.9624     1.5240
                  19.2024     1.5240
                  34.4424     1.5240
                  49.6824     1.5240
                   3.9624     3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X    5190.25.78  4.2  20.  0.  5.  13. 2  2A 28.00
X    5190.25.78  4.2  20.  0.  5.  63. 2  2A 28.00
X    5190.25.78  4.2  20.  0.  5. 113. 2  2A 28.00
X    5190.25.78  4.2  20.  0.  5. 163. 2  2A 28.00
     5190.25.78  4.2  20.  0. 10.  13. 2  2A 28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X    5190.25.78  4.2  20.  0.  5.  13. 2  2A 28.00
X    5190.25.78  4.2  20.  0.  5.  63. 2  2A 28.00
X    5190.25.78  4.2  20.  0.  5. 113. 2  2A 28.00
X    5190.25.78  4.2  20.  0.  5. 163. 2  2A 28.00
     5190.25.78  4.2  20.  0. 10.  13. 2  2A 28.00
```

TABLE 25

PREDICTIONS FOR TEST A, SITE 2

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	13	3.00	1.62	1.62	2.40	2.40	5.12	5.10
D	5	63	2.90	1.04	1.04	1.50	1.50	3.12	3.10
D	5	113	2.40	0.69	0.69	1.10	1.10	2.59	2.50
D	5	163	1.40	0.51	0.51	0.90	0.90	2.31	2.30
D	10	13	4.20	1.36	1.36	2.10	2.10	4.52	4.50
U	5	10	0.60	0.99	0.99	*****	*****	*****	*****
U	5	60	0.60	0.32	0.32	*****	*****	*****	*****
U	5	110	0.60	0.13	0.13	*****	*****	*****	*****
U	5	160	0.0	0.07	0.07	*****	*****	*****	*****
U	10	10	1.20	0.80	0.80	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 8 FOR SITE 2 WAS MADE ON 7/ 3/73 FROM 11:15 TO 12:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 1.2 AND 0.5 KILOFEET (0.4 AND 0.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 6.9 MPH (3.08 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.2 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 20 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1598, 54(87), 8) AND (1690, 58(93), 9).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        NORTHAMPTON BLVD. & I64          60   73        C C   69
  28D N 1690          58        9         3        12  5                D 20 10  13  50
  28D S 1598          54        8         3        12  5                D 20 10 109  50
  ADD
  28U S 1598          54        8         3        12  5                U 20 10  10  50
  28U N 1690          58        9         3        12  5                U 20 10 106  50
  END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                               28
    -366.        0.       152.          0.     0.0       40.2336    18.2880         6.
.002404052.002404052.002404052.002367244.002367244.002367244

     250.   3.084575         3.    600.0
0.001
                  3.9624     1.5240
                 19.2024     1.5240
                 49.6824     1.5240
                  3.9624     3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                               28
    -366.        0.       152.          0.     0.0       40.2336    18.2880         6.
.002404052.002404052.002404052.002367244.002367244.002367244

     250.   3.084575         3.    600.0
0.001
                  3.9624     1.5240
                 19.2024     1.5240
                 49.6824     1.5240
                  3.9624     3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  2B
    3288.25.20  6.9  20.  0.  5.  13. 3   28.00
X                                                                  2B
    3288.25.20  6.9  20.  0.  5.  63. 3   28.00
X                                                                  2B
    3288.25.20  6.9  20.  0.  5. 163. 3   28.00
X                                                                  2B
    3288.25.20  6.9  20.  0. 10.  13. 3   28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  2B
    3288.25.20  6.9  20.  0.  5.  13. 3   28.00
X                                                                  2B
    3288.25.20  6.9  20.  0.  5.  63. 3   28.00
X                                                                  2B
    3288.25.20  6.9  20.  0.  5. 163. 3   28.00
X                                                                  2B
    3288.25.20  6.9  20.  0. 10.  13. 3   28.00
```

TABLE 26

PREDICTIONS FOR TEST B, SITE 2

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	13	0.60	1.14	1.14	1.20	1.20	2.00	2.00
D	5	63	1.00	0.78	0.78	0.87	0.87	1.28	1.20
D	5	163	0.0	0.40	0.40	0.60	0.60	0.98	0.98
D	10	13	2.40	0.95	0.95	1.00	1.00	1.75	1.70
U	5	10	0.40	0.57	0.57	*****	*****	*****	*****
U	5	60	0.40	0.07	0.07	*****	*****	*****	*****
U	5	110	0.20	0.02	0.02	*****	*****	*****	*****
U	5	160	0.60	0.01	0.01	*****	*****	*****	*****
U	10	10	0.40	0.42	0.42	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TABLE 27

DOWNWIND ANALYSIS, SITE 2

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	9.00	9.00	9.00	9.00
AVG DEVATION	-1.05	-1.05	0.64	-0.66
AVG SQRD DEV	2.19	2.19	0.99	1.18
PROBLE ERROR	0.99	0.99	0.67	0.73
% CORR COEF	0.67	0.67	0.83	0.80
A, OB=A*P+B	2.25	2.25	0.79	1.75
B, OB=A*P+B	-0.13	-0.13	-0.08	-0.34
MINIMUM DEV	-2.84	-2.84	-0.65	-2.01
MAXIMUM DEV	0.54	0.54	2.12	0.62
DEVATN RANGE	3.38	3.38	2.77	2.63
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	4.20	4.20	4.20	4.20
OBSATN RANGE	4.20	4.20	4.20	4.20
SUM DEVATION	-9.41	-9.41	5.77	-5.91
SUM SQRD DEV	19.75	19.75	8.93	10.61
AVG OBSATION	1.99	1.99	1.99	1.99
AVG PREDTION	0.94	0.94	2.63	1.33
VAR DEVATION	1.24	1.24	0.65	0.84
VAR PREDTION	0.16	0.16	1.98	0.38
VAR OBSRVATN	1.79	1.79	1.79	1.79
AVG D/AVG OB	-0.53	-0.53	0.32	-0.33
AVG P/AVG OB	0.47	0.47	1.32	0.67
MIN D/AVG OB	-1.43	-1.43	-0.33	-1.01
MAX D/AVG OB	0.27	0.27	1.07	0.31
RNG D/RNG OB	0.80	0.80	0.66	0.63

TABLE 28

UPWIND ANALYSIS, SITE 2

STATISTICS	VAI	VAP
DATA POINTS	10.00	10.00
AVG DEVATION	-0.16	-0.16
AVG SQRD DEV	0.11	0.11
PROBLE ERROR	0.23	0.23
% CORR COEF	0.56	0.56
A, OB=A*P+B	0.51	0.51
B, OB=A*P+B	0.33	0.33
MINIMUM DEV	-0.59	-0.59
MAXIMUM DEV	0.39	0.39
DEVATN RANGE	0.98	0.98
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	1.20	1.20
OBSATN RANGE	1.20	1.20
SUM DEVATION	-1.60	-1.60
SUM SQRD DEV	1.13	1.13
AVG OBSATION	0.50	0.50
AVG PREDTION	0.34	0.34
VAR DEVATION	0.10	0.10
VAR PREDTION	0.12	0.12
VAR OBSRVATN	0.10	0.10
AVG D/AVG OB	-0.32	-0.32
AVG P/AVG OB	0.68	0.68
MIN D/AVG OB	-1.18	-1.18
MAX D/AVG OB	0.78	0.78
RNG D/RNG OB	0.82	0.82

TABLE 29

UPWIND AND DOWNWIND ANALYSIS, SITE 2

STATISTICS	VAI	VAP
DATA POINTS	19.00	19.00
AVG DEVATION	-0.58	-0.58
AVG SQRD DEV	1.10	1.10
PROBLE ERROR	0.70	0.70
% CORR COEF	0.75	0.75
A, OB=A*P+B	1.87	1.87
B, OB=A*P+B	0.03	0.03
MINIMUM DEV	-2.84	-2.84
MAXIMUM DEV	0.54	0.54
DEVATN RANGE	3.38	3.38
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	4.20	4.20
OBSATN RANGE	4.20	4.20
SUM DEVATION	-11.01	-11.01
SUM SQRD DEV	20.88	20.88
AVG OBSATION	1.21	1.21
AVG PREDTION	0.63	0.63
VAR DEVATION	0.81	0.81
VAR PREDTION	0.23	0.23
VAR OBSRVATN	1.43	1.43
AVG D/AVG OB	-0.48	-0.48
AVG P/AVG OB	0.52	0.52
MIN D/AVG OB	-2.36	-2.36
MAX D/AVG OB	0.45	0.45
RNG D/RNG OB	0.80	0.80

SITE 3, DATA, RESULTS, AND PERFORMANCE STATISTICS

This section describes the physical characteristics of Site 3; details the observed meteorological, traffic, and receptor location parameters for each of the 3 sampling periods; lists the inputs used with the AIRPOL-4, HIWAY, and CALAIR prediction models for each of the sampling intervals; lists the actual and predicted CO levels at each receptor location for each of the sampling intervals; and presents the performance statistics of the Virginia (Turner and Pasquill) and California and EPA (Turner only) prediction models for the total Site 3 data set. Tables 30 through 32 present the observed and predicted CO levels for sampling periods A through C, respectively. Tables 33, 34, and 35 present the downwind, upwind, and upwind and downwind performance statistics, respectively, of the prediction models relative to the total Site 3 data set.

Site 3, Figure 3, is located on Interstate 95 near Edsall Road in Fairfax, Virginia (Annandale Quadrangle, Virginia, UTM coordinates 4,296,520 m N by 312,900 m E). I-95 at this location is an at-grade, ten-lane, triple-divided facility with two 21-foot (6.4-m) medians separating the reversible two-lane center roadway from the two fixed direction, four-lane roadways. The highway runs approximately north and south in the area of this site. The land to the east of the roadway is basically open while to the west there are scattered commercial establishments. The nearest external pollutant source of any significance is Edsall Road, located approximately 1,000 feet (300 m) west of the site.

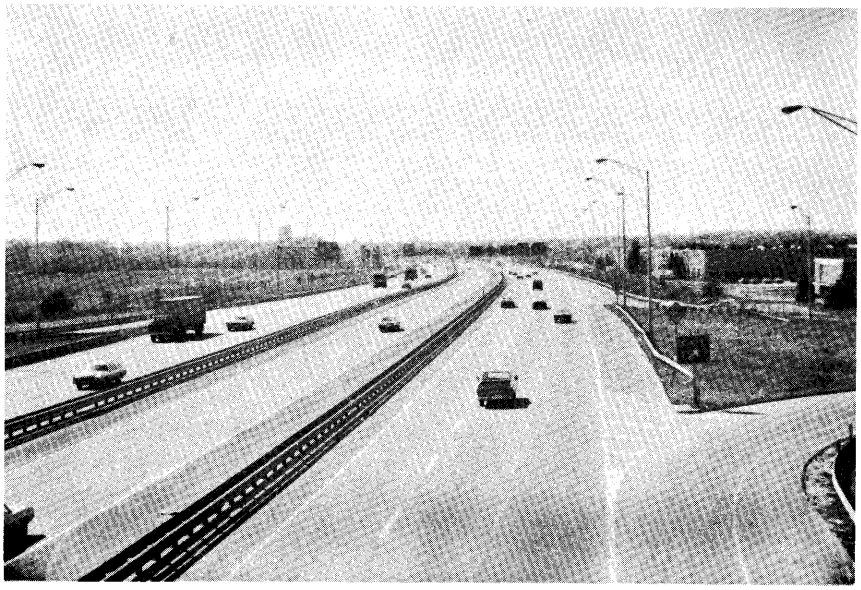

Figure 3. Site 3, an at-grade site located on Interstate 95 near Edsall Road in Fairfax County, Virginia.

TEST A FOR SITE 3 WAS MADE ON 7/17/73 FROM 16:15 TO 17:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.0 AND 6.0 KILOFEET (1.8 AND 1.8 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.9 MPH (1.30 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.0 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 90 DEGREES. THE TRAFFIC DATA FOR THE UPWIND, DOWNWIND, AND CENTER LANE GROUPS IN (VPH, MPH(KM/HR), %HDV) WERE (3090, 54(87), 5), (3560, 54(87), 4), AND (1600, 54(87), 4).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
                EDSEL RD. & I495          60   73      D R  29
3AD S 3560              54      4              60 60              D 90 10  12  50
3AD S 1600              54      4              60 60              D 90 10  81  50
3AD N 3090              54      5              60 60              D 90 10 126  50
ADD
3AU N 3090              54      5              60 60              U 90 10  12  50
3AU S 1600              54      4              60 60              U 90 10  81  50
3AU S 3560              54      4              60 60              U 90 10 126  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                    3A
   -1829.        0.      1829.          0.     0.0      49.3776   20.1168        8.
.005410541.005410541.005410541.005410541.003288301.003288301.003288301.003288301

      180.  1.296415         4.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               49.3776    1.5240
                3.6576    3.0480
9999.0

                                                    3A
   -1829.        0.      1829.          0.     0.0       7.3152    0.0            2.
.003464427.003246327

      180.  1.296415         4.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               49.3776    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                    3A
   -1829.        0.      1829.          0.     0.0      49.3776   20.1168        8.
.005410541.005410541.005410541.005410541.003288301.003288301.003288301.003288301

      180.  1.296415         2.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               49.3776    1.5240
                3.6576    3.0480
9999.0

                                                    3A
   -1829.        0.      1829.          0.     0.0       7.3152    0.0            2.
.003464427.003246327

      180.  1.296415         2.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               49.3776    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                          3A
      8250.24.44   2.9   90.    0.    5.   12.  4    28.00
X
                                                          3A
      8250.24.44   2.9   90.    0.    5.   62.  4    28.00
X
                                                          3A
      8250.24.44   2.9   90.    0.    5.  162.  4    28.00
X
                                                          3A
      8250.24.44   2.9   90.    0.   10.   12.  4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                          3A
      8250.24.44   2.9   90.    0.    5.   12.  2    28.00
X
                                                          3A
      8250.24.44   2.9   90.    0.    5.   62.  2    28.00
X
                                                          3A
      8250.24.44   2.9   90.    0.    5.  162.  2    28.00
X
                                                          3A
      8250.24.44   2.9   90.    0.   10.   12.  2    28.00
```

TABLE 30

PREDICTIONS FOR TEST A, SITE 3

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	5.40	2.64	2.13	3.80	3.60	4.24	3.90
D	5	62	2.70	2.28	1.58	3.30	3.70	2.81	2.30
D	5	162	1.20	1.78	1.01	2.90	2.60	2.22	1.70
D	10	12	3.80	2.17	1.67	1.70	2.30	3.64	3.40
U	5	12	0.70	0.0	0.0	*****	*****	*****	*****
U	5	62	0.20	0.0	0.0	*****	*****	*****	*****
U	5	112	0.40	0.0	0.0	*****	*****	*****	*****
U	5	212	0.20	0.0	0.0	*****	*****	*****	*****
U	5	312	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.20	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST H FOR SITE 3 WAS MADE ON 7/18/73 FROM 7:15 TO 8:15 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.0 AND 6.0 KILOFEET (1.8 AND 1.8 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE A AND A, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 1.3 MPH (0.58 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 3.7 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 37 DEGREES. THE TRAFFIC DATA FOR THE UPWIND, DOWNWIND, AND CENTER LANE GROUPS IN (VPH, MPH(KM/HR), %HDV) WERE (4436, 53(85), 8), (2370, 53(85), 5), AND (234, 53(85), 5).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
            EDSEL RD. & I495          60   73      A A  13
3RD S 2370                  53    8          60 60              D 37 10  12  50
3RD N  234                  53    5          60 60              D 37 10  81  50
3RD N 4436                  53    5          60 60              U 37 10 126  50
ADD
3RD N 4436                  53    8          60 60              U 37 10  12  50
3RD N  234                  53    5          60 60              U 37 10  81  50
3RD S 2370                  53    5          60 60              U 37 10 126  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                    3B
   -1829.        0.      1829.        0.    0.0      49.3776   20.1168        8.
.002671368.002671368.002671368.002671368.005041823.005041823.005041823.005041823

     233.  0.581152         1.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              49.3776    1.5240
               3.6576    3.0480
9999.0
                                                    3B
   -1829.        0.      1829.        0.    0.0      7.3152    0.0            2.
.000202969.000807555

     233.  0.581152         1.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              49.3776    1.5240
               3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                    3B
   -1829.        0.      1829.        0.    0.0      49.3776   20.1168        8.
.002671368.002671368.002671368.002671368.005041823.005041823.005041823.005041823

     233.  0.581152         1.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              49.3776    1.5240
               3.6576    3.0480
9999.0
                                                    3B
   -1829.        0.      1829.        0.    0.0      7.3152    0.0            2.
.000202969.000807555

     233.  0.581152         1.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              49.3776    1.5240
               3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

3B, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 31

PREDICTIONS FOR TEST B, SITE 3

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	5.30	1.86	1.86	6.40	6.40	*****	*****
D	5	62	3.80	1.31	1.31	3.80	3.80	*****	*****
D	5	162	1.80	0.74	0.74	2.20	2.30	*****	*****
D	10	12	5.30	1.64	1.64	5.10	5.10	*****	*****
U	5	12	2.40	3.60	3.60	*****	*****	*****	*****
U	5	62	1.20	0.28	0.28	*****	*****	*****	*****
U	5	112	1.20	0.16	0.16	*****	*****	*****	*****
U	5	212	0.0	0.07	0.07	*****	*****	*****	*****
U	5	312	0.40	0.03	0.03	*****	*****	*****	*****
U	10	12	3.70	2.19	2.19	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST C FOR SITE 3 WAS MADE ON 7/18/73 FROM 11:00 TO 12:00 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.0 AND 6.0 KILOFEET (1.8 AND 1.8 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE A AND A, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 4.6 MPH (2.06 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.0 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 10 DEGREES. THE TRAFFIC DATA FOR THE UPWIND, DOWNWIND, AND CENTER LANE GROUPS IN (VPH, MPH(KM/HR), %HDV) WERE (1779, 54(87), 11), (2340, 54(87), 10), AND (391, 54(87), 11).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
                EDSEL RD. & I495          60   73        A A  46
3CD N 2340              54        10              60 60              D 10 10  12  50
3CD S  391              54        11              60 60              D 10 10  81  50
3CD S 1779              54        11              60 60              D 10 10 126  50
ADD
3CU S 1779              54        11              60 60              U 10 10  12  50
3CU S  391              54        11              60 60              U 10 10  81  50
3CU N 2340              54        10              60 60              U 10 10 126  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                    3C
   -1829.        0.      1829.        0.    0.0      49.3776   20.1168        8.
.002672923.002672923.002672923.002672923.002512631.002512631.002512631.002512631

      260.  2.056383        1.   600.0
0.001
               3.6576   1.5240
              18.8976   1.5240
              95.0976   1.5240
               3.6576   3.0480
9999.0

                                                    3C
   -1829.        0.      1829.        0.    0.0      7.3152    0.0             2.
.000805894.001005052

      260.  2.056383        1.   600.0
0.001
               3.6576   1.5240
              18.8976   1.5240
              95.0976   1.5240
               3.6576   3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                    3C
   -1829.        0.      1829.        0.    0.0      49.3776   20.1168        8.
.002672923.002672923.002672923.002672923.002512631.002512631.002512631.002512631

      260.  2.056383        1.   600.0
0.001
               3.6576   1.5240
              18.8976   1.5240
              95.0976   1.5240
               3.6576   3.0480
9999.0

                                                    3C
   -1829.        0.      1829.        0.    0.0      7.3152    0.0             2.
.000805894.001005052

      260.  2.056383        1.   600.0
0.001
               3.6576   1.5240
              18.8976   1.5240
              95.0976   1.5240
               3.6576   3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
P
     4510.26.65  4.6  10.  0.  5.  12. 1  3C  28.00  6000.  162.
P
     4510.26.65  4.6  10.  0.  5.  62. 1  3C  28.00  6000.  162.
P
     4510.26.65  4.6  10.  0.  5. 312. 1  3C  28.00  6000.  162.
P
     4510.26.65  4.6  10.  0. 10.  12. 1  3C  28.00  6000.  162.
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
P
     4510.26.65  4.6  10.  0.  5.  12. 1  3C  28.00  6000.  162.
P
     4510.26.65  4.6  10.  0.  5.  62. 1  3C  28.00  6000.  162.
P
     4510.26.65  4.6  10.  0.  5. 312. 1  3C  28.00  6000.  162.
P
     4510.26.65  4.6  10.  0. 10.  12. 1  3C  28.00  6000.  162.
```

TABLE 32

PREDICTIONS FOR TEST C, SITE 3

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.80	0.91	0.91	0.99	0.99	3.97	3.90
D	5	62	0.50	0.58	0.58	0.39	0.39	3.51	3.50
D	5	312	0.0	0.16	0.16	0.12	0.12	1.86	1.80
D	10	12	1.50	0.77	0.77	0.93	0.93	3.55	3.50
U	5	12	2.50	1.21	1.21	*****	*****	*****	*****
U	5	62	0.40	0.28	0.28	*****	*****	*****	*****
U	5	112	0.90	0.17	0.17	*****	*****	*****	*****
U	5	212	0.30	0.13	0.13	*****	*****	*****	*****
U	5	312	0.0	0.09	0.09	*****	*****	*****	*****
U	10	12	1.20	0.79	0.79	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TABLE 33

DOWNWIND ANALYSIS, SITE 3

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	12.00	12.00	8.00	12.00
AVG DEVATION	-1.35	-1.56	1.11	-0.10
AVG SQRD DEV	3.72	4.20	2.98	1.05
PROBLE ERROR	1.29	1.37	1.16	0.69
% CORR COEF	0.75	0.93	0.63	0.85
A. OB=A*P+B	1.86	3.03	1.34	0.84
B. OB=A*P+B	0.15	-0.86	-2.22	0.53
MINIMUM DEV	-3.66	-3.66	-1.16	-2.06
MAXIMUM DEV	0.58	0.16	3.01	1.75
DEVATN RANGE	4.24	3.82	4.17	3.81
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	5.40	5.40	5.40	5.40
OBSATN RANGE	5.40	5.40	5.40	5.40
SUM DEVATION	-16.26	-18.74	8.90	-1.18
SUM SQRD DEV	44.70	50.43	23.85	12.63
AVG OBSATION	2.76	2.76	2.11	2.76
AVG PREDTION	1.40	1.20	3.22	2.66
VAR DEVATION	2.06	1.92	1.99	1.14
VAR PREDTION	0.60	0.35	0.71	3.80
VAR OBSRVATN	3.69	3.69	3.20	3.69
AVG D/AVG OB	-0.49	-0.57	0.53	-0.04
AVG P/AVG OB	0.51	0.43	1.53	0.96
MIN D/AVG OB	-1.33	-1.33	-0.55	-0.75
MAX D/AVG OB	0.21	0.06	1.42	0.63
RNG D/RNG OB	0.79	0.71	0.77	0.71

TABLE 34

UPWIND ANALYSIS, SITE 3

STATISTICS	VAI	VAP
DATA POINTS	18.00	18.00
AVG DEVATION	-0.38	-0.38
AVG SQRD DEV	0.50	0.50
PROBLE ERROR	0.47	0.47
% CORR COEF	0.81	0.81
A, OB=A*P+B	0.87	0.87
B, OB=A*P+B	0.45	0.45
MINIMUM DEV	-1.51	-1.51
MAXIMUM DEV	1.20	1.20
DEVATN RANGE	2.71	2.71
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	3.70	3.70
OBSATN RANGE	3.70	3.70
SUM DEVATION	-6.90	-6.90
SUM SQRD DEV	8.98	8.98
AVG OBSATION	0.88	0.88
AVG PREDTION	0.50	0.50
VAR DEVATION	0.37	0.37
VAR PREDTION	0.92	0.92
VAR OBSRVATN	1.06	1.06
AVG D/AVG OB	-0.43	-0.43
AVG P/AVG OB	0.57	0.57
MIN D/AVG OB	-1.71	-1.71
MAX D/AVG OB	1.36	1.36
RNG D/RNG OB	0.73	0.73

TABLE 35

UPWIND AND DOWNWIND ANALYSIS, SITE 3

STATISTICS	VAI	VAP
DATA POINTS	30.00	30.00
AVG DEVATION	-0.77	-0.85
AVG SQRD DEV	1.79	1.98
PROBLE ERROR	0.90	0.94
% CORR COEF	0.78	0.79
A, OB=A*P+B	1.36	1.51
B, OB=A*P+B	0.46	0.46
MINIMUM DEV	-3.66	-3.66
MAXIMUM DEV	1.20	1.20
DEVATN RANGE	4.86	4.86
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	5.40	5.40
OBSATN RANGE	5.40	5.40
SUM DEVATION	-23.16	-25.64
SUM SQRD DEV	53.67	59.41
AVG OBSATION	1.63	1.63
AVG PREDTION	0.86	0.78
VAR DEVATION	1.23	1.29
VAR PREDTION	0.97	0.79
VAR OBSRVATN	2.89	2.89
AVG D/AVG OB	-0.47	-0.52
AVG P/AVG OB	0.53	0.48
MIN D/AVG OB	-2.24	-2.24
MAX D/AVG OB	0.73	0.73
RNG D/RNG OB	0.90	0.90

SITE 4, DATA, RESULTS, AND PERFORMANCE STATISTICS

This section describes the physical characteristics of Site 4; details the observed meteorological, traffic, and receptor location parameters for each of the 7 sampling periods; lists the inputs used with the AIRPOL-4, HIWAY, and CALAIR prediction models for each of the sampling intervals; lists the actual and predicted CO levels at each receptor location for each of the sampling intervals; and presents the performance statistics of the Virginia (Turner and Pasquill) and California and EPA (Turner only) prediction models for the total Site 4 data set. Tables 36 through 42 present the observed and predicted CO levels for sampling periods A through G, respectively. Tables 43, 44, and 45 present the downwind, upwind, and upwind and downwind performance statistics, respectively, of the prediction models relative to the total Site 4 data set.

Site 4, Figure 4, is located on Interstate 264 near Merrimac Avenue in Norfolk, Virginia (Kempsville Quadrangle, Virginia, UTM coordinates 4,078,230 m N by 389,080 m E). I-264 at this location is a six-lane, dual-divided, 35-foot (10.7-m) high fill facility with a 42-foot (12.8-m) median. The highway runs approximately east and west. The land on both sides of the roadway contains single-family dwellings and light industrial buildings. The nearest external pollutant source of any significance is Merrimac Avenue, located approximately 2,800 feet (850 m) west of the site.

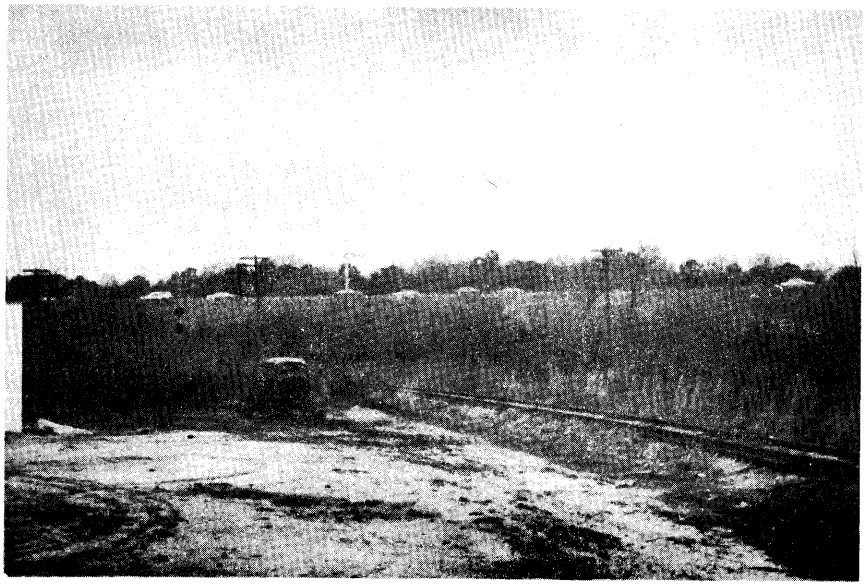

Figure 4. Site 4, an elevated site located on Interstate 264 near Merrimac Avenue in Norfolk, Virginia.

TEST A FOR SITE 4 WAS MADE ON 8/ 2/73 FROM 15:00 TO 16:00 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 7.2 MPH (3.22 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.9 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 56 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1680, 52(84), 4) AND (1350, 54(87), 13).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        MERRIMAC AVE. & I264          60   73       D C  72
4AD W 1350              54       13          35 65 68          D 56 40  85 100
4AD E 1680              52        4          35 65 68          D 56 40 163 100
ADD
4AD W 1350              54       13          35 65 68          D 56 40  15  50
4AD E 1680              52        4          35 65 68          D 56 40  93  50
ADD
4AD W 1350              54       13       3  35 65 68          D 56 45  15  50
4AD E 1680              52        4       3  35 65 68          D 56 45  93  50
ADD
4AU E 1680              52        4          35 65 68          U 56 40  12  75
4AU W 1350              54       13          35 65 68          U 56 40  90  75
ADD
4AU E 1680              52        4          35 65 68          U 56 40  12  62
4AU W 1350              54       13          35 65 68          U 56 40  90  62
ADD
4AU E 1680              52        4          35 65 68          U 56 45  12  75
4AU W 1350              54       13          35 65 68          U 56 45  90  75
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        4A
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.002140442.002140442.002140442.002418251.002418251.002418251

     214.  3.218687        4.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                    4A
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.002140442.002140442.002140442.002418251.002418251.002418251

      214.  3.218687        3.   600.0
0.001
                25.9080    1.5240
                56.3880    1.5240
                86.8680    1.5240
               117.3480    1.5240
                 4.5720   12.1920
                 4.5720   13.7160
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                    4A
     3030.26.17  7.2  56.  35.   5.  85. 4    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.   5. 185. 4    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.   5. 285. 4    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.   5. 385. 4    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.  40.  15. 4    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.  45.  15. 4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                    4A
     3030.26.17  7.2  56.  35.   5.  85. 3    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.   5. 185. 3    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.   5. 285. 3    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.   5. 385. 3    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.  40.  15. 3    28.00
X
                                                    4A
     3030.26.17  7.2  56.  35.  45.  15. 3    28.00
```

TABLE 36

PREDICTIONS FOR TEST A, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	0.40	0.06	0.10	0.02	0.06	0.25	0.25
D	5	185	0.20	0.10	0.13	0.06	0.14	0.25	0.25
D	5	285	0.20	0.12	0.14	0.09	0.19	0.25	0.24
D	5	385	0.0	0.13	0.14	0.15	0.20	0.25	0.23
D	40	15	0.80	0.18	0.19	0.32	0.28	0.74	0.70
D	45	15	1.80	0.18	0.18	0.18	0.18	0.67	0.64
U	5	87	0.10	0.0	0.0	*****	*****	*****	*****
U	5	322	0.0	0.0	0.0	*****	*****	*****	*****
U	40	12	0.20	0.13	0.16	*****	*****	*****	*****
U	45	12	0.10	0.12	0.15	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST B FOR SITE 4 WAS MADE ON 8/ 3/73 FROM 7:45 TO 8:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.8 MPH (2.59 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.7 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 54 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1170, 53(85), 15) AND (3890, 56(90), 3).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        MERRIMAC AVE. & I264          60   73       D B  58
480 W 3890              56       3          35 65 68          D 54 40  85 100
480 E 1170              53      15          35 65 68          D 54 40 163 100
ADD
480 W 3890              56       3          35 65 68          D 54 40  15  50
480 E 1170              53      15          35 65 68          D 54 40  93  50
ADD
480 W 3890              56       3       3  35 65 68          D 54 45  15  50
480 E 1170              53      15       3  35 65 68          D 54 45  93  50
ADD
480 E 1170              53      15       3  35 65 68          U 54 45  12  75
480 W 3890              56       3       3  35 65 68          U 54 45  90  75
ADD
480 E 1170              53      15       3  35 65 68          U 54 45  12  62
480 W 3890              56       3       3  35 65 68          U 54 45  90  62
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  48
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.005210310.005210310.005210310.001931414.001931414.001931414

     216.  2.592831        4.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                    4B
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.005210310.005210310.005210310.001931414.001931414.001931414

      216.  2.592831        2.   600.0
0.001
                25.9080    1.5240
                56.3880    1.5240
               117.3480    1.5240
                 4.5720   12.1920
                 4.5720   13.7160
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                          4B
     5060.24.49  5.8  54.  35.   5.  85. 4    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.   5. 185. 4    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.   5. 385. 4    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.  40.  15. 4    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.  45.  15. 4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                          4B
     5060.24.49  5.8  54.  35.   5.  85. 2    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.   5. 185. 2    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.   5. 385. 2    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.  40.  15. 2    28.00
X                                                          4B
     5060.24.49  5.8  54.  35.  45.  15. 2    28.00
```

TABLE 37

PREDICTIONS FOR TEST B, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	1.40	0.10	0.23	0.03	0.21	0.49	0.51
D	5	185	1.70	0.17	0.25	0.10	0.34	0.51	0.47
D	5	385	1.10	0.24	0.21	0.30	0.33	0.49	0.41
D	40	15	4.50	0.43	0.41	0.69	0.57	1.47	1.30
D	45	15	3.10	0.41	0.40	0.34	0.39	1.33	1.20
U	5	87	0.0	0.0	0.0	*****	*****	*****	*****
U	5	322	0.30	0.0	0.0	*****	*****	*****	*****
U	45	12	0.30	0.12	0.16	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST C FOR SITE 4 WAS MADE ON 8/ 3/73 FROM 8:45 TO 9:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 4.9 MPH (2.19 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.7 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 63 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1140, 50(80), 15) AND (2110, 53(85), 5).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        MERRIMAC AVE. & I264          60   73      D B  49
4CD W 2110              53        5          35 65 68          D 63 40  85 100
4CD E 1140              50       15          35 65 68          D 63 40 163 100
ADD
4CD W 2110              53        5          35 65 68          D 63 40  15  50
4CD E 1140              50       15          35 65 68          D 63 40  93  50
ADD
4CD W 2110              53        5       3  35 65 68          D 63 45  15  50
4CD E 1140              50       15       3  35 65 68          D 63 45  93  50
ADD
4CU E 1140              50       15       3  35 65 68          U 63 40  12  75
4CU W 2110              53        5       3  35 65 68          U 63 40  90  75
ADD
4CU E 1140              50       15       3  35 65 68          U 63 40  12  62
4CU W 2110              53        5       3  35 65 68          U 63 40  90  62
ADD
4CU E 1140              50       15       3  35 65 68          U 63 45  12  62
4CU W 2110              53        5       3  35 65 68          U 63 45  90  62
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                4C
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.003037330.003037330.003037330.001969117.001969117.001969117

      207.  2.190495        4.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                          4C
    -1981.          0.       2073.          0.   10.6680   34.7472   12.8016        6.
.003037330.003037330.003037330.001969117.001969117.001969117
      207.  2.190495          2.    600.0
0.001
                  25.9080    1.5240
                  56.3880    1.5240
                  86.8680    1.5240
                 117.3480    1.5240
                   4.5720   12.1920
                   4.5720   13.7160
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                          4C
     3250.26.72  4.9  63.  35.   5.  85. 4    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.   5. 185. 4    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.   5. 285. 4    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.   5. 385. 4    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.  40.  15. 4    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.  45.  15. 4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                          4C
     3250.26.72  4.9  63.  35.   5.  85. 2    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.   5. 185. 2    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.   5. 285. 2    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.   5. 385. 2    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.  40.  15. 2    28.00
X
                                                          4C
     3250.26.72  4.9  63.  35.  45.  15. 2    28.00
```

TABLE 38

PREDICTIONS FOR TEST C, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	2.40	0.07	0.15	0.02	0.14	0.37	0.38
D	5	185	1.10	0.11	0.18	0.06	0.25	0.38	0.36
D	5	285	0.90	0.14	0.17	0.11	0.26	0.38	0.33
D	5	385	0.60	0.16	0.15	0.14	0.24	0.37	0.31
D	40	15	2.50	0.27	0.27	0.51	0.41	1.11	1.00
D	45	15	1.60	0.26	0.26	0.26	0.28	1.00	0.93
U	5	87	0.0	0.0	0.0	*****	*****	*****	*****
U	5	322	0.10	0.0	0.0	*****	*****	*****	*****
U	40	12	0.0	0.07	0.13	*****	*****	*****	*****
U	45	12	0.30	0.07	0.12	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST D FOR SITE 4 WAS MADE ON 8/28/74 FROM 14:30 TO 15:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND A, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 6.4 MPH (2.86 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.2 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 75 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1898, 55(88), 3) AND (1504, 55(88), 6).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        MERRIMAC AVE. & I264          60   74        B A  64          60
4DD W 1504              55        6       3  35 65 68              D 75 40  15  70
4DD E 1898              55        3       3  35 65 68              D 75 40  93  70
ADD
4DD W 1504              55        6       3  35 65 68              D 75 40 185 100
4DD E 1898              55        3       3  35 65 68              D 75 40 263 100
ADD
4DD W 1504              55        6       3  35 65 68              D 75 40  15  70
4DD E 1898              55        3       3  35 65 68              D 75 40  93  70
ADD
4DD W 1504              55        6       3  35 65 68              D 75 45  15  70
4DD E 1898              55        3       3  35 65 68              D 75 45  93  70
ADD
4DU E 1898              55        3       3  35 65 68              U 75 10  87 235
4DU W 1504              55        6       3  35 65 68              U 75 10 165 235
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  4D
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.001939347.001939347.001939347.002324191.002324191.002324191

      195.  2.682240        2.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                    4D
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.001939347.001939347.001939347.002324191.002324191.002324191

      195.  2.682240        1.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                   4D
     3402.21.78  6.0  75.  35.   5.  85. 2    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.   5. 185. 2    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.   5. 285. 2    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.   5. 385. 2    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.  40.  15. 2    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.  45.  15. 2    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                   4D
     3402.21.78  6.0  75.  35.   5.  85. 1    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.   5. 185. 1    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.   5. 285. 1    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.   5. 385. 1    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.  40.  15. 1    28.00
X                                                   4D
     3402.21.78  6.0  75.  35.  45.  15. 1    28.00
```

TABLE 39

PREDICTIONS FOR TEST D, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	0.30	0.10	0.11	0.0	0.0	0.24	0.20
D	5	185	0.40	0.12	0.12	0.10	0.10	0.23	0.20
D	5	285	0.30	0.12	0.10	0.10	0.10	0.21	0.10
D	5	385	0.20	0.11	0.09	0.10	0.10	0.20	0.10
D	40	15	2.10	0.17	0.17	0.20	0.20	0.65	0.60
D	45	15	1.20	0.16	0.17	0.10	0.10	0.60	0.50
U	5	87	0.0	0.0	0.0	*****	*****	*****	*****
U	5	322	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST E FOR SITE 4 WAS MADE ON 8/28/74 FROM 15:30 TO 16:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.6 MPH (2.50 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.7 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 75 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1633, 55(88), 4) AND (1514, 55(88), 6).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        MERRIMAC AVE. & I264          60   74        B B  56
4ED W 1514              55        6       3  35 65 68          D 75 40  15  70
4ED E 1633              55        4       3  35 65 68          D 75 40  93  70
ADD
4ED W 1514              55        6       3  35 65 68          D 75 40 185 100
4ED E 1633              55        4       3  35 65 68          D 75 40 263 100
ADD
4ED W 1514              55        6       3  35 65 68          D 75 40  15  70
4ED E 1633              55        4       3  35 65 68          D 75 40  93  70
ADD
4EU E 1633              55        4       3  35 65 68          U 75 40  87 235
4EU W 1514              55        6       3  35 65 68          U 75 40 165 235
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  4E
   -1981.        0.      2073.        0.   10.6680   34.7472   12.8016        6.
.001952242.001952242.001952242.002035020.002035020.002035020

     195.  2.503423        2.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                                4E
    -1981.          0.       2073.          0.    10.6680   34.7472   12.8016          6.
.001952242.001952242.001952242.002035020.002035020.002035020

      195.  2.503423          2.    600.0
0.001
                25.9080    1.5240
                56.3880    1.5240
                86.8680    1.5240
               117.3480    1.5240
                 4.5720   12.1920
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                                4E
     3147.22.02  5.6  75.  35.   5.  85. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.   5. 185. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.   5. 285. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.   5. 385. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.  40.  15. 2    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                                4E
     3147.22.02  5.6  75.  35.   5.  85. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.   5. 185. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.   5. 285. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.   5. 385. 2    28.00
X
                                                                4E
     3147.22.02  5.6  75.  35.  40.  15. 2    28.00
```

TABLE 40

PREDICTIONS FOR TEST E, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	1.80	0.10	0.10	0.0	0.0	0.25	0.20
D	5	185	1.00	0.12	0.12	0.10	0.10	0.23	0.20
D	5	285	0.90	0.12	0.12	0.10	0.10	0.21	0.20
D	5	385	0.80	0.11	0.11	0.10	0.10	0.20	0.20
D	40	15	4.60	0.17	0.17	0.20	0.20	0.66	0.60
U	5	87	0.50	0.0	0.0	*****	*****	*****	*****
U	5	322	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST E FOR SITE 4 WAS MADE ON 8/28/74 FROM 16:30 TO 17:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.6 MPH (2.50 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.9 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 65 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2251, 55(88), 2) AND (1598, 55(88), 4).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          MERRIMAC AVE. & I264          60   74        B B  56
4FD W 1598              55        4       3  35 65 68              D 65 40  85 100
4FD E 2251              55        2       3  35 65 68              D 65 40 163 100
ADD
4FD W 1598              55        4       3  35 65 68              D 65 40  15 100
4FD E 2251              55        2       3  35 65 68              D 65 40  93 100
ADD
4FD W 1598              55        4       3  35 65 68              D 65 45  15 100
4FD E 2251              55        2       3  35 65 68              D 65 45  93 100
ADD
4FU E 2251              55        2          35 65 68              U 65 10  87 235
4FU W 1598              55        4          35 65 68              U 65 10 165 235
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                  4F
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.001991404.001991404.001991404.002707751.002707751.002707751

     205.  2.503423        2.   600.0
0.001
                25.9080    1.5240
                56.3880    1.5240
                86.8680    1.5240
               117.3480    1.5240
                 4.5720   12.1920
                 4.5720   13.7160
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                                4F
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.001991404.001991404.001991404.002707751.002707751.002707751

     205.  2.503423        2.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                               4F
     3849.21.22  5.6  65.  35.   5.  85. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.   5. 185. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.   5. 285. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.   5. 385. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.  40.  15. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.  45.  15. 2    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                               4F
     3849.21.22  5.6  65.  35.   5.  85. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.   5. 185. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.   5. 285. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.   5. 385. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.  40.  15. 2    28.00
X                                                               4F
     3849.21.22  5.6  65.  35.  45.  15. 2    28.00
```

TABLE 41

PREDICTIONS FOR TEST E, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	0.90	0.13	0.13	0.10	0.10	0.31	0.30
D	5	185	1.00	0.15	0.15	0.20	0.20	0.29	0.20
D	5	285	0.70	0.14	0.14	0.20	0.20	0.27	0.20
D	5	385	0.60	0.13	0.13	0.10	0.10	0.25	0.20
D	40	15	4.20	0.20	0.20	0.20	0.20	0.82	0.80
D	45	15	4.00	0.20	0.20	0.20	0.20	0.76	0.70
U	5	87	0.10	0.0	0.0	*****	*****	*****	*****
U	5	322	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST G FOR SITE 4 WAS MADE ON 8/28/74 FROM 17:30 TO 18:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 6.5 AND 6.8 KILOFEET (2.0 AND 2.1 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 6.4 MPH (2.86 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.9 PPM. THE SOURCE HEIGHT WAS 35 FEET (10.7 METERS). THE ROAD/WIND ANGLE WAS 85 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1358, 55(88), 1) AND (1776, 55(88), 4).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
         MERRIMAC AVE. & I264          60   74        C B  64
4GD W 1776              55        4       3  35 65 68          D 85 40  15  70
4GD E 1358              55        1       3  35 65 68          D 85 40  93  70
ADD
4GD W 1776              55        4       3  35 65 68          D 85 40 185 100
4GD E 1358              55        1       3  35 65 68          D 85 40 263 100
ADD
4GD W 1776              55        4       3  35 65 68          D 85 40  15  70
4GD E 1358              55        1       3  35 65 68          D 85 40  93  70
ADD
4GD W 1776              55        4       3  35 65 68          D 85 45  15  70
4GD E 1358              55        1       3  35 65 68          D 85 45  93  70
ADD
4GU E 1358              55        1          35 65 68          U 85 10  87 235
4GU W 1776              55        4          35 65 68          U 85 10 165 235
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        4G
   -1981.        0.     2073.        0.   10.6680   34.7472   12.8016        6.
.002213224.002213224.002213224.001604168.001604168.001604168

     185.  2.861055        3.   600.0
0.001
              25.9080    1.5240
              56.3880    1.5240
              86.8680    1.5240
             117.3480    1.5240
               4.5720   12.1920
               4.5720   13.7160
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                                4G
   -1981.          0.       2073.          0.    10.6680   34.7472   12.8016          6.
.002213224.002213224.002213224.001604168.001604168.001604168

      185.  2.861055          2.    600.0
0.001
                25.9080     1.5240
                56.3880     1.5240
                86.8680     1.5240
               117.3480     1.5240
                 4.5720    12.1920
                 4.5720    13.7160
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                               4G
     3134.21.17  6.4  85.  35.   5.  85. 3    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.   5. 185. 3    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.   5. 285. 3    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.   5. 385. 3    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.  40.  15. 3    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.  45.  15. 3    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                               4G
     3134.21.17  6.4  85.  35.   5.  85. 2    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.   5. 185. 2    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.   5. 285. 2    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.   5. 385. 2    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.  40.  15. 2    28.00
X                                                               4G
     3134.21.17  6.4  85.  35.  45.  15. 2    28.00
```

TABLE 42

PREDICTIONS FOR TEST G, SITE 4

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	85	1.10	0.06	0.08	0.0	0.0	0.20	0.20
D	5	185	0.90	0.09	0.10	0.0	0.0	0.19	0.10
D	5	285	0.80	0.10	0.10	0.0	0.0	0.19	0.10
D	5	385	0.60	0.10	0.10	0.0	0.0	0.18	0.10
D	40	15	2.30	0.16	0.16	0.20	0.20	0.55	0.50
D	45	15	2.00	0.15	0.15	0.10	0.10	0.50	0.40
U	5	87	0.10	0.0	0.0	*****	*****	*****	*****
U	5	322	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TABLE 43

DOWNWIND ANALYSIS, SITE 4

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	40.00	40.00	40.00	40.00
AVG DEVATION	-1.27	-1.26	-0.96	-1.26
AVG SQRD DEV	2.94	2.92	1.89	2.85
PROBLE ERROR	1.15	1.15	0.92	1.13
% CORR COEF	0.62	0.63	0.75	0.59
A, OB=A*P+B	9.52	10.45	2.84	5.39
B, OB=A*P+B	-0.04	-0.29	0.11	0.53
MINIMUM DEV	-4.43	-4.43	-3.94	-4.36
MAXIMUM DEV	0.13	0.14	0.29	0.15
DEVATN RANGE	4.56	4.57	4.19	4.51
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	4.60	4.60	4.60	4.60
OBSATN RANGE	4.60	4.60	4.60	4.60
SUM DEVATION	-50.86	-50.42	-38.50	-50.33
SUM SQRD DEV	117.79	116.85	75.67	114.05
AVG OBSATION	1.42	1.42	1.42	1.42
AVG PREDTION	0.15	0.16	0.46	0.17
VAR DEVATION	1.36	1.37	0.99	1.30
VAR PREDTION	0.01	0.01	0.10	0.02
VAR OBSRVATN	1.47	1.47	1.47	1.47
AVG D/AVG OB	-0.89	-0.88	-0.68	-0.88
AVG P/AVG OB	0.11	0.12	0.32	0.12
MIN D/AVG OB	-3.11	-3.11	-2.76	-3.06
MAX D/AVG OB	0.09	0.10	0.18	0.11
RNG D/RNG OB	0.99	0.99	0.91	0.98

TABLE 44

UPWIND ANALYSIS. SITE 4

STATISTICS	VAI	VAP
DATA POINTS	19.00	19.00
AVG DEVATION	-0.08	-0.07
AVG SQRD DEV	0.03	0.02
PROBLE ERROR	0.11	0.10
% CORR COEF	0.31	0.30
A. OB=A*P+B	0.92	0.66
B. OB=A*P+B	0.09	0.09
MINIMUM DEV	-0.50	-0.50
MAXIMUM DEV	0.07	0.13
DEVATN RANGE	0.57	0.63
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	0.50	0.50
OBSATN RANGE	0.50	0.50
SUM DEVATION	-1.59	-1.38
SUM SQRD DEV	0.48	0.45
AVG OBSATION	0.11	0.11
AVG PREDTION	0.03	0.04
VAR DEVATION	0.02	0.02
VAR PREDTION	0.00	0.00
VAR OBSRVATN	0.02	0.02
AVG D/AVG OB	-0.76	-0.66
AVG P/AVG OB	0.24	0.34
MIN D/AVG OB	-4.52	-4.52
MAX D/AVG OB	0.63	1.18
RNG D/RNG OB	1.14	1.26

TABLE 45

UPWIND AND DOWNWIND ANALYSIS, SITE 4

STATISTICS	VAT	VAP
DATA POINTS	59.00	59.00
AVG DEVATION	-0.89	-0.88
AVG SQRD DEV	2.00	1.99
PROBLE ERROR	0.95	0.94
% CORR COEF	0.71	0.70
A, OB=A*P+B	9.15	8.88
B, OB=A*P+B	-0.03	-0.10
MINIMUM DEV	-4.43	-4.43
MAXIMUM DEV	0.13	0.14
DEVATN RANGE	4.56	4.57
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	4.60	4.60
OBSATN RANGE	4.60	4.60
SUM DEVATION	-52.45	-51.80
SUM SQRD DEV	118.26	117.30
AVG OBSATION	1.00	1.00
AVG PREDTION	0.11	0.12
VAR DEVATION	1.24	1.24
VAR PREDTION	0.01	0.01
VAR OBSRVATN	1.38	1.38
AVG D/AVG OB	-0.89	-0.88
AVG P/AVG OB	0.11	0.12
MIN D/AVG OB	-4.42	-4.42
MAX D/AVG OB	0.13	0.14
RNG D/RNG OB	0.99	0.99

SITE 5, DATA, RESULTS, AND PERFORMANCE STATISTICS

This section describes the physical characteristics of Site 5; details the observed meteorological, traffic, and receptor location parameters for each of the 15 sampling periods; lists the inputs used with the AIRPOL-4, HIWAY, and CALAIR prediction models for each of the sampling intervals; lists the actual and predicted CO levels at each receptor location for each of the sampling intervals; and presents the performance statistics of the Virginia (Turner only) prediction models for the total Site 5 data set. Tables 46 through 60 present the observed and predicted CO levels for sampling periods. A through Q, respectively, (Sampling periods G and H were deleted from the data set in response to a malfunction of the field equipment.) Tables 61, 62, and 63 present the downwind, upwind, and upwind and downwind performance statistics, respectively, of the prediction models relative to the total Site 5 data set.

Site 5, Figure 5, is located on Interstate 64 near Norview Avenue in Norfolk, Virginia (Little Creed Quadrangle, Virginia, UTM coordinates 4,083,960 m N by 390,040 m E). I-64 at this location is an at-grade, six-lane, dual-divided facility with a 60-foot (18.3-m) median. The highway runs approximately north and south. There is a pedestrian overpass at the site. The land on both sides of the roadway contains one-story, single-family dwellings. The nearest external pollutant source of any significantly is Norview Avenue, located approximately 2,000 feet (600 m) away from the site.

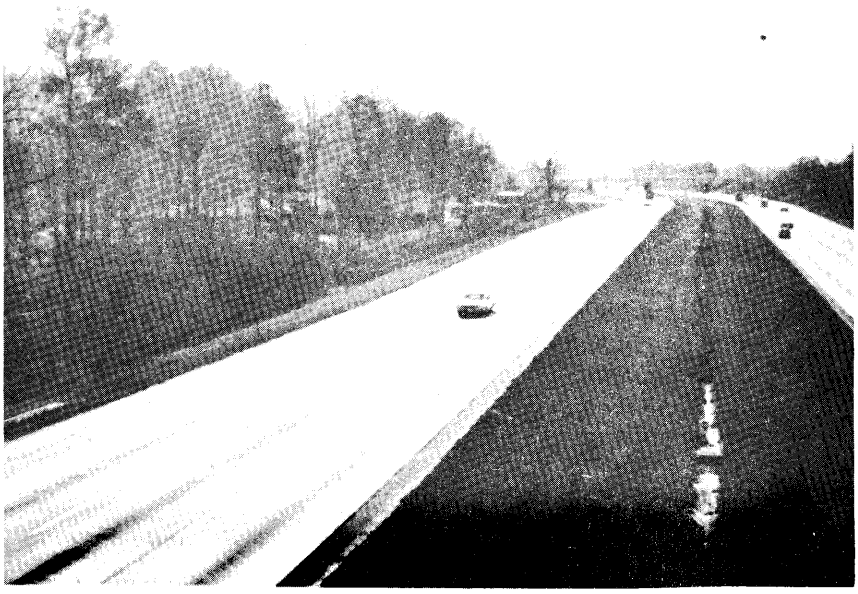

Figure 5. Site 5, an at-grade site located on Interstate 64 near Norview Avenue in Norfolk, Virginia.

TEST A FOR SITE 5 WAS MADE ON 1/30/74 FROM 15:35 TO 16:35 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 1.2 MPH (0.54 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.5 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 81 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1480, 51(82), 5) AND (3820, 51(82), 5).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
           NORVIEW AVE. & I64           60   74       B B  12
    5AD E 3820          51        4        3      20 40              D 81 10  12  50
    5AD W 1480          51        5        3      20 40              D 81 10 108  50
    ADD
    5AU W 1480          51        5        3      20 40              U 81 10  12  50
    5AU E 3820          51        5        3      20 40              U 81 10 108  50
    END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                            5A
     -610.        0.       1219.          0.      0.0       40.2336    18.2880        6.
.005046397.005046397.005046397.001989097.001989097.001989097

      189.   0.536448          2.     600.0
0.001
               18.8976      1.5240
               49.3776      1.5240
              110.3376      1.5240
                3.6576      3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                            5A
     -610.        0.       1219.          0.      0.0       40.2336    18.2880        6.
.005046397.005046397.005046397.001989097.001989097.001989097

      189.   0.536448          2.     600.0
0.001
               18.8976      1.5240
               49.3776      1.5240
              110.3376      1.5240
                3.6576      3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

5A, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 46

PREDICTIONS FOR TEST A, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	62	0.70	1.36	1.36	2.80	2.80	*****	*****
D	5	162	0.0	0.83	0.83	1.70	1.70	*****	*****
D	5	362	0.0	0.46	0.46	1.40	1.40	*****	*****
D	10	12	1.50	1.30	1.30	2.40	2.40	*****	*****
U	5	12	0.20	0.0	0.0	*****	*****	*****	*****
U	5	62	0.0	0.0	0.0	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.50	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 6 FOR SITE 5 WAS MADE ON 1/30/74 FROM 16:35 TO 17:35 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 2.0 KILOFEET (1.2 AND 0.6 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 0.7 MPH (0.31 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.2 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 82 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2090, 50(80), 3) AND (4560, 50(80), 3).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
        NORVIEW AVE. 6 164            60   74          B B    7
5BD E 4560           50        3        3      40 20              0 82 10  12  50
5BD W 2090           50        3        3      40 20              0 82 10 108  50
ADD
5BU W 2090           50        3        3      40 20              0 82 10  12  50
5BU E 4560           50        3        3      40 20              0 82 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                          5B
   -1219.        0.       610.            0.      0.0      40.2336   18.2880        6.
.006011624.006011624.006011624.002755330.002755330.002755330

     188.   0.268224        2.    600.0
0.001
                 3.6576     1.5240
                18.8976     1.5240
                49.3776     1.5240
               110.3376     1.5240
                 3.6576     3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                          5B
   -1219.        0.       610.            0.      0.0      40.2336   18.2880        6.
.006011624.006011624.006011624.002755330.002755330.002755330

     188.   0.268224        2.    600.0
0.001
                 3.6576     1.5240
                18.8976     1.5240
                49.3776     1.5240
               110.3376     1.5240
                 3.6576     3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

5B, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 47

PREDICTIONS FOR TEST B, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.70	2.49	2.49	10.00	10.00	*****	*****
D	5	62	1.50	1.79	1.79	6.90	6.90	*****	*****
D	5	162	1.00	1.10	1.10	4.10	4.10	*****	*****
D	5	362	1.10	0.63	0.63	3.60	3.60	*****	*****
D	10	12	2.20	1.72	1.72	6.10	6.10	*****	*****
U	5	12	1.10	0.0	0.0	*****	*****	*****	*****
U	5	62	0.20	0.0	0.0	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.80	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST C FOR SITE 5 WAS MADE ON 1/31/74 FROM 8:30 TO 9:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 2.0 KILOFEET (1.2 AND 0.6 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.6 MPH (2.50 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.2 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 88 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1760, 45(72), 10) AND (1170, 45(72), 5).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74      D C  56
SCD W 1170              45      5       3     40 20              D 88 10  12  50
SCD E 1760              45     10       3     40 20              D 88 10 108  50
ADD
SCU E 1760              45     10       3     40 20              U 88 10  12  50
SCU W 1170              45      5       3     40 20              U 88 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        5C
   -1219.        0.      610.         0.    0.0      40.2336   18.2880        6.
.001735829.001735829.001735829.002833980.002833980.002833980

     182.  2.503423        4.   600.0
0.001
                3.6576    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        5C
   -1219.        0.      610.         0.    0.0      40.2336   18.2880        6.
.001735829.001735829.001735829.002833980.002833980.002833980

     182.  2.503423        3.   600.0
0.001
                3.6576    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
     2930.27.11  5.6  88.   0.   5.  12. 4   5C  28.00
X
     2930.27.11  5.6  88.   0.   5. 162. 4   5C  28.00
X
     2930.27.11  5.6  88.   0.   5. 262. 4   5C  28.00
X
     2930.27.11  5.6  88.   0.   5. 362. 4   5C  28.00
X
     2930.27.11  5.6  88.   0.  10.  12. 4   5C  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
     2930.27.11  5.6  88.   0.   5.  12. 3   5C  28.00
X
     2930.27.11  5.6  88.   0.   5. 162. 3   5C  28.00
X
     2930.27.11  5.6  88.   0.   5. 262. 3   5C  28.00
X
     2930.27.11  5.6  88.   0.   5. 362. 3   5C  28.00
X
     2930.27.11  5.6  88.   0.  10.  12. 3   5C  28.00
```

TABLE 48

PREDICTIONS FOR TEST C, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.20	0.78	0.69	0.62	0.53	0.86	0.83
D	5	162	1.00	0.53	0.39	0.40	0.29	0.45	0.40
D	5	262	0.40	0.43	0.30	0.32	0.22	0.40	0.34
D	5	362	0.20	0.36	0.25	0.27	0.18	0.37	0.31
D	10	12	1.20	0.65	0.57	0.33	0.33	0.74	0.72
U	5	12	0.10	0.0	0.0	*****	*****	*****	*****
U	5	62	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST D FOR SITE 5 WAS MADE ON 1/31/74 FROM 9:30 TO 10:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 4.0 AND 2.0 KILOFEET (1.2 AND 0.6 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND C, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 5.0 MPH (2.24 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.0 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 79 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1190, 46(74), 10) AND (1010, 46(74), 11).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74       D C  50
5DD W 1010                46        11    3     40 20          D 79 10  12  50
5DD E 1190                46        10    3     40 20          D 79 10 108  50
ADD
5DU E 1190                46        10    3     40 20          U 79 10  12  50
5DU W 1010                46        11    3     40 20          U 79 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        5D
   -1219.        0.      610.        0.    0.0      40.2336   18.2880        6.
.001623164.001623164.001623164.001882832.001882832.001882832

     191.  2.235199        4.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             49.3776    1.5240
             79.8576    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        5D
   -1219.        0.      610.        0.    0.0      40.2336   18.2880        6.
.001623164.001623164.001623164.001882832.001882832.001882832

     191.  2.235199        3.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             49.3776    1.5240
             79.8576    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X   2200.27.70   5.0   79.   0.    5.   12.  4   5D   28.00
X   2200.27.70   5.0   79.   0.    5.   62.  4   5D   28.00
X   2200.27.70   5.0   79.   0.    5.  162.  4   5D   28.00
X   2200.27.70   5.0   79.   0.    5.  262.  4   5D   28.00
X   2200.27.70   5.0   79.   0.    5.  362.  4   5D   28.00
    2200.27.70   5.0   79.   0.   10.   12.  4   5D   28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X   2200.27.70   5.0   79.   0.    5.   12.  3   5D   28.00
X   2200.27.70   5.0   79.   0.    5.   62.  3   5D   28.00
X   2200.27.70   5.0   79.   0.    5.  162.  3   5D   28.00
X   2200.27.70   5.0   79.   0.    5.  262.  3   5D   28.00
X   2200.27.70   5.0   79.   0.    5.  362.  3   5D   28.00
    2200.27.70   5.0   79.   0.   10.   12.  3   5D   28.00
```

TABLE 49

PREDICTIONS FOR TEST D, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.10	0.66	0.59	0.57	0.50	0.76	0.72
D	5	62	1.00	0.57	0.47	0.47	0.38	0.50	0.45
D	5	162	0.60	0.44	0.33	0.36	0.25	0.40	0.35
D	5	262	0.30	0.36	0.25	0.29	0.19	0.35	0.30
D	5	362	0.30	0.30	0.20	0.24	0.16	0.32	0.28
D	10	12	0.80	0.52	0.46	0.29	0.30	0.65	0.63
U	5	12	0.0	0.0	0.0	*****	*****	*****	*****
U	5	62	0.10	0.0	0.0	*****	*****	*****	*****
U	5	262	0.40	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST E FOR SITE 5 WAS MADE ON 3/ 6/74 FROM 15:45 TO 16:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFFET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.7 MPH (1.21 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.4 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 36 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1334, 54(87), 3) AND (3706, 57(92), 3).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74      D B  27
SED E 3706                 57    3     3    20 40              D 36 10  12  50
SED W 1334                 54    3     3    20 40              D 36 10 108  50
ADD
SEU W 1334                 54    3     3    20 40              U 36 10  12  50
SEU E 1334                 54    3     3    20 40              U 36 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        5E
   -610.        0.      1219.          0.     0.0      40.2336   18.2880        6.
.004416209.004416209.004416209.001656716.001656716.001656716

    234.  1.207007         4.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               64.6176    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        5F
   -610.        0.      1219.          0.     0.0      40.2336   18.2880        6.
.004416209.004416209.004416209.001656716.001656716.001656716

    234.  1.207007         2.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               64.6176    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                                  5E
    5040.20.93  2.7  36.  0.  5.  12. 4    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5.  62. 4    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5. 112. 4    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5. 212. 4    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5. 362. 4    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0. 10.  12. 4    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                                  5E
    5040.20.93  2.7  36.  0.  5.  12. 2    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5.  62. 2    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5. 112. 2    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5. 212. 2    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0.  5. 362. 2    28.00
X                                                                  5E
    5040.20.93  2.7  36.  0. 10.  12. 2    28.00
```

TABLE 50

PREDICTIONS FOR TEST E, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.20	2.16	1.62	3.30	2.60	4.05	3.70
D	5	62	0.90	1.93	1.15	2.40	1.60	2.69	2.20
D	5	112	0.50	1.58	0.81	2.10	1.20	2.32	1.80
D	5	212	0.20	1.14	0.51	2.10	0.98	1.98	1.50
D	5	362	0.10	0.81	0.32	1.90	0.80	1.73	1.20
D	10	12	1.70	1.53	1.27	1.80	2.00	3.48	3.20
U	5	12	0.50	0.24	0.38	*****	*****	*****	*****
U	5	62	1.10	0.0	0.04	*****	*****	*****	*****
U	5	112	0.30	0.0	0.01	*****	*****	*****	*****
U	5	312	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST E FOR SITE 5 WAS MADE ON 3/ 6/74 FROM 16:45 TO 17:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.3 MPH (1.03 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.6 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 48 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1654, 58(93), 3) AND (2988, 55(88), 3).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74      D B  23
5FD E 2988              55        3       3     20 40            D 48 10  12  50
5FD W 1654              58        3       3     20 40            D 48 10 108  50
ADD
5FU W 1654              58        3       3     20 40            U 48 10  12  50
5FU E 2988              55        3       3     20 40            U 48 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        5F
    -610.        0.     1219.        0.    0.0      40.2336   18.2880        6.
.003658948.003658948.003658948.001945161.001945161.001945161

     222.  1.028192        4.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             34.1376    1.5240
             64.6176    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        5F
    -610.        0.     1219.        0.    0.0      40.2336   18.2880        6.
.003658948.003658948.003658948.001945161.001945161.001945161

     222.  1.028192        2.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             34.1376    1.5240
             64.6176    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X  4642.20.97  2.3  48.  0.  5.  12. 4  5F 28.00
X  4642.20.97  2.3  48.  0.  5.  62. 4  5F 28.00
X  4642.20.97  2.3  48.  0.  5. 112. 4  5F 28.00
X  4642.20.97  2.3  48.  0.  5. 212. 4  5F 28.00
X  4642.20.97  2.3  48.  0.  5. 362. 4  5F 28.00
   4642.20.97  2.3  48.  0. 10.  12. 4  5F 28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X  4642.20.97  2.3  48.  0.  5.  12. 2  5F 28.00
X  4642.20.97  2.3  48.  0.  5.  62. 2  5F 28.00
X  4642.20.97  2.3  48.  0.  5. 112. 2  5F 28.00
X  4642.20.97  2.3  48.  0.  5. 212. 2  5F 28.00
X  4642.20.97  2.3  48.  0.  5. 362. 2  5F 28.00
   4642.20.97  2.3  48.  0. 10.  12. 2  5F 28.00
```

TABLE 51

PREDICTIONS FOR TEST E, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.40	1.73	1.38	2.80	2.30	3.47	3.20
D	5	62	0.80	1.56	1.02	2.20	1.60	2.31	1.90
D	5	112	0.30	1.31	0.75	1.80	1.30	1.99	1.50
D	5	212	0.30	0.99	0.49	1.60	1.00	1.70	1.30
D	5	362	0.10	0.73	0.32	1.80	0.82	1.49	1.00
D	10	12	1.70	1.25	1.06	1.50	1.70	2.98	2.80
U	5	12	0.60	0.21	0.31	*****	*****	*****	*****
U	5	62	1.30	0.0	0.0	*****	*****	*****	*****
U	5	112	0.0	0.0	0.0	*****	*****	*****	*****
U	5	312	0.10	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST I FOR SITE 5 WAS MADE ON 4/15/74 FROM 14:30 TO 15:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 8.5 MPH (3.80 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.0 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 82 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2092, 56(90), 5) AND (1448, 59(95), 4).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74      B B  85
SID W 1448              59      4       3     20 40              D 82 10  12  50
SID E 2092              56      5       3     20 40              D 82 10 108  50
ADD
SIU E 2092              56      5       3     20 40              U 82 10  12  50
SIU W 1448              59      4       3     20 40              U 82 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        5I
    -610.        0.      1219.         0.    0.0      40.2336   18.2880        6.
.001710774.001710774.001710774.002616008.002616008.002616008

     188.  3.799839         2.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               49.3776    1.5240
               79.8576    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        5I
    -610.        0.      1219.         0.    0.0      40.2336   18.2880        6.
.001710774.001710774.001710774.002616008.002616008.002616008

     188.  3.799839         2.   600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               49.3776    1.5240
               79.8576    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X    3540.21.23  8.5  82.  0.  5.  12. 2  5I  28.00
X    3540.21.23  8.5  82.  0.  5.  62. 2  5I  28.00
X    3540.21.23  8.5  82.  0.  5. 162. 2  5I  28.00
X    3540.21.23  8.5  82.  0.  5. 262. 2  5I  28.00
     3540.21.23  8.5  82.  0. 10.  12. 2  5I  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X    3540.21.23  8.5  82.  0.  5.  12. 2  5I  28.00
X    3540.21.23  8.5  82.  0.  5.  62. 2  5I  28.00
X    3540.21.23  8.5  82.  0.  5. 162. 2  5I  28.00
X    3540.21.23  8.5  82.  0.  5. 262. 2  5I  28.00
     3540.21.23  8.5  82.  0. 10.  12. 2  5I  28.00
```

TABLE 52

PREDICTIONS FOR TEST I, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	0.50	0.46	0.46	0.30	0.30	0.50	0.50
D	5	62	0.30	0.34	0.34	0.21	0.21	0.30	0.30
D	5	162	0.10	0.22	0.22	0.13	0.13	0.22	0.22
D	5	262	0.0	0.16	0.16	0.12	0.12	0.19	0.19
D	10	12	0.20	0.37	0.37	0.20	0.20	0.44	0.44
U	5	12	0.10	0.0	0.0	*****	*****	*****	*****
U	5	62	0.0	0.0	0.0	*****	*****	*****	*****
U	5	262	0.10	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST J FOR SITE 5 WAS MADE ON 4/15/74 FROM 15:30 TO 16:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 8.3 MPH (3.71 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.1 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 73 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (4216, 54(87), 2) AND (1764, 59(95), 3).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74       B B  83
5JD W 1764                 59        3    3     20 40              D 73 10  12  50
5JD E 4216                 54        2    3     20 40              D 73 10 108  50
ADD
5JU E 4216                 54        2    3     20 40              U 73 10  12  50
5JU W 1764                 59        3    3     20 40              U 73 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                        5J
   -610.        0.      1219.         0.    0.0      40.2336   18.2880         6.
.002047933.002047933.002047933.005143400.005143400.005143400

    197.  3.710431         2.   600.0
0.001
              3.6576    1.5240
             34.1376    1.5240
             49.3776    1.5240
             79.8576    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                        5J
   -610.        0.      1219.         0.    0.0      40.2336   18.2880         6.
.002047933.002047933.002047933.005143400.005143400.005143400

    197.  3.710431         2.   600.0
0.001
              3.6576    1.5240
             34.1376    1.5240
             49.3776    1.5240
             79.8576    1.5240
            110.3376    1.5240
              3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X   5980.20.88  8.3  73.   0.   5.  12. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 112. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 162. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 262. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 362. 2   5J  28.00
    5980.20.88  8.3  73.   0.  10.  12. 2   5J  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X   5980.20.88  8.3  73.   0.   5.  12. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 112. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 162. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 262. 2   5J  28.00
X   5980.20.88  8.3  73.   0.   5. 362. 2   5J  28.00
    5980.20.88  8.3  73.   0.  10.  12. 2   5J  28.00
```

TABLE 53

PREDICTIONS FOR TEST 4, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	2.10	0.74	0.74	0.49	0.49	0.89	0.89
D	5	112	1.30	0.43	0.43	0.27	0.27	0.44	0.44
D	5	162	0.90	0.36	0.36	0.27	0.27	0.39	0.39
D	5	262	0.60	0.26	0.26	0.25	0.25	0.34	0.34
D	5	362	0.80	0.21	0.21	0.22	0.22	0.30	0.30
D	10	12	0.10	0.63	0.63	0.36	0.36	0.78	0.78
U	5	12	0.50	0.06	0.06	*****	*****	*****	*****
U	5	62	0.30	0.0	0.0	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST K FOR SITE 5 WAS MADE ON 4/15/74 FROM 16:30 TO 17:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE B AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 6.1 MPH (2.73 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.6 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 38 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (3420, 50(80), 3) AND (1992, 58(93), 3).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
              NORVIEW AVE. & I64          60    74        B B  61
5KD  W 1992             58        3          3      20 40              D 38 10  12  50
5KD  E 3420             50        3          3      20 40              D 38 10 108  50
ADD
5KU  E 3420             50        3          3      20 40              U 38 10  12  50
5KU  W 1992             58        3          3      20 40              U 38 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                5K
   -610.          0.         1219.          0.      0.0        40.2336     18.2880         6.
.002342661.002342661.002342661.004508715.004508715.004508715

     232.   2.726943          2.     600.0
0.001
                3.6576     1.5240
               18.8976     1.5240
               49.3776     1.5240
               79.8576     1.5240
              110.3376     1.5240
                3.6576     3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                5K
   -610.          0.         1219.          0.      0.0        40.2336     18.2880         6.
.002342661.002342661.002342661.004508715.004508715.004508715

     232.   2.726943          2.     600.0
0.001
                3.6576     1.5240
               18.8976     1.5240
               49.3776     1.5240
               79.8576     1.5240
              110.3376     1.5240
                3.6576     3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
     5412.21.92  6.1  38.  0.  5.  12. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5.  62. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5. 162. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5. 262. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5. 362. 2   5K  28.00
X
     5412.21.92  6.1  38.  0. 10.  12. 2   5K  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
     5412.21.92  6.1  38.  0.  5.  12. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5.  62. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5. 162. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5. 262. 2   5K  28.00
X
     5412.21.92  6.1  38.  0.  5. 362. 2   5K  28.00
X
     5412.21.92  6.1  38.  0. 10.  12. 2   5K  28.00
```

TABLE 54

PREDICTIONS FOR TEST K, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.60	0.99	0.99	0.97	0.97	1.78	1.70
D	5	62	0.70	0.73	0.73	0.70	0.70	1.06	1.00
D	5	162	0.60	0.43	0.43	0.51	0.51	0.79	0.79
D	5	262	0.50	0.31	0.31	0.43	0.43	0.68	0.68
D	5	362	0.40	0.24	0.24	0.39	0.39	0.60	0.60
D	10	12	1.30	0.87	0.87	0.81	0.81	1.56	1.50
U	5	12	0.40	0.67	0.67	*****	*****	*****	*****
U	5	62	0.20	0.06	0.06	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST L FOR SITE 5 WAS MADE ON 4/15/74 FROM 17:30 TO 18:30 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 6.2 MPH (2.77 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 0.8 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 21 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (2340, 53(85), 3) AND (1634, 58(93), 2).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & 164          60   74       C B  62
5LD W 1634              58        2       3      20 40              D 21 10  12  50
5LD E 2340              53        3       3      20 40              D 21 10 108  50
ADD
5LU W 2340              53        3       3      20 40              U 21 10  12  50
5LU E 1634              58        2       3      20 40              U 21 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                5L
   -610.         0.      1219.         0.     0.0      40.2336   18.2880         6.
.001887685.001887685.001887685.002948262.002948262.002948262

     249.  2.771647         3.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                5L
   -610.         0.      1219.         0.     0.0      40.2336   18.2880         6.
.001887685.001887685.001887685.002948262.002948262.002948262

     249.  2.771647         2.    600.0
0.001
                3.6576    1.5240
               18.8976    1.5240
               34.1376    1.5240
               49.3776    1.5240
               79.8576    1.5240
              110.3376    1.5240
                3.6576    3.0480
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.   12. 3    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.   62. 3    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  112. 3    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  162. 3    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  262. 3    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  362. 3    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.  10.   12. 3    28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.   12. 2    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.   62. 2    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  112. 2    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  162. 2    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  262. 2    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.   5.  362. 2    28.00
X
                                                          5L
      3974.21.11  6.2  21.   0.  10.   12. 2    28.00
```

TABLE 55

PREDICTIONS FOR TEST L, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.40	1.14	0.76	1.10	0.86	2.20	2.10
D	5	62	0.70	0.81	0.51	0.83	0.55	1.38	1.20
D	5	112	0.40	0.59	0.36	0.70	0.45	1.17	1.00
D	5	162	0.30	0.47	0.28	0.62	0.39	1.05	0.94
D	5	262	0.40	0.32	0.18	0.53	0.31	0.92	0.81
D	5	362	0.20	0.23	0.13	0.46	0.26	0.84	0.71
D	10	12	1.00	0.98	0.66	0.99	0.78	1.91	1.80
U	5	62	0.0	0.08	0.19	*****	*****	*****	*****
U	5	262	0.10	0.0	0.02	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST M FOR SITE 5 WAS MADE ON 8/ 1/74 FROM 8:45 TO 9:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE C AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 1.2 MPH (0.54 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 2.3 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 35 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1700, 56(90), 8) AND (1100, 56(90), 10).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
           NORVIEW AVE. & I64              60    74       C B   12
5MD E 1100                56         10          3      20 40
5MD W 1700                56          8          3      20 40           D 35 10  12  50
ADD                                                                     D 35 10 108  50
5MU W 1700                56          8          3      20 40
5MU E 1100                56         10          3      20 40           U 35 10  12  50
END                                                                     U 35 10 108  50
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                5M
   -610.         0.       1219.           0.     0.0         40.2336    18.2880          6.
.001492908.001492908.001492908.002234660.002234660.002234660

     235.   0.536448          3.     600.0
0.001
               3.6576     1.5240
              18.8976     1.5240
              79.8576     1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                5M
   -610.         0.       1219.           0.     0.0         40.2336    18.2880          6.
.001492908.001492908.001492908.002234660.002234660.002234660

     235.   0.536448          2.     600.0
0.001
               3.6576     1.5240
              18.8976     1.5240
              79.8576     1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

CALAIR INPUTS, PASQUILL STABILITY CLASS

5M, WIND SPEED .LT. 2.0 MPH, NO CALAIR INPUT

TABLE 56

PREDICTIONS FOR TEST M, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.80	1.24	0.98	3.50	2.90	*****	*****
D	5	62	0.80	0.97	0.70	2.70	2.00	*****	*****
D	5	262	0.40	0.45	0.29	1.70	1.10	*****	*****
U	5	12	1.60	0.50	0.62	*****	*****	*****	*****
U	5	62	0.60	0.0	0.07	*****	*****	*****	*****
U	5	112	0.20	0.0	0.02	*****	*****	*****	*****
U	5	162	0.10	0.0	0.01	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	5	362	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	1.60	0.31	0.44	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST N FOR SITE 5 WAS MADE ON 8/ 1/74 FROM 9:45 TO 10:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.0 MPH (0.89 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.6 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 65 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1440, 58(93), 18) AND (1190, 58(93), 10).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60    74        D B   20
5ND E 1190                 58    10       3     20 40
5ND W 1440                 58    18       3     20 40           D 65 10  12  50
ADD                                                             D 65 10 108  50
5NU W 1440                 58    18       3     20 40
5NU E 1190                 58    10       3     20 40           U 65 10  12  50
END                                                             U 65 10 108  50
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
   -610.          0.        1219.              5N
                                           0.       0.0        40.2336      18.2880           6.
.001572580.001572580.001572580.002142341.002142341.002142341
          205.   0.894080            4.     600.0
0.001
                   3.6576      1.5240
                  18.8976      1.5240
                  79.8576      1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
   -610.          0.        1219.              5N
                                           0.       0.0        40.2336      18.2880           6.
.001572580.001572580.001572580.002142341.002142341.002142341
          205.   0.894080            2.     600.0
0.001
                   3.6576      1.5240
                  18.8976      1.5240
                  79.8576      1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
      2630.24.55   2.0   65.    0.    5.   12. 4    5N
                                                      28.00
X
      2630.24.55   2.0   65.    0.    5.   62. 4    5N
                                                      28.00
X
      2630.24.55   2.0   65.    0.    5.  262. 4    5N
                                                      28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
      2630.24.55   2.0   65.    0.    5.   12. 2    5N
                                                      28.00
X
      2630.24.55   2.0   65.    0.    5.   62. 2    5N
                                                      28.00
X
      2630.24.55   2.0   65.    0.    5.  262. 2    5N
                                                      28.00
```

TABLE 57

PREDICTIONS FOR TEST N, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	MIWAY TURNER PPM CO	MIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	0.0	1.00	0.78	1.60	1.20	2.17	2.00
D	5	62	0.70	0.87	0.58	1.30	0.90	1.44	1.20
D	5	262	0.30	0.54	0.26	0.70	0.60	1.01	0.70
U	5	12	1.30	0.07	0.14	*****	*****	*****	*****
U	5	62	0.40	0.0	0.0	*****	*****	*****	*****
U	5	112	0.10	0.0	0.0	*****	*****	*****	*****
U	5	262	0.0	0.0	0.0	*****	*****	*****	*****
U	5	362	0.10	0.0	0.0	*****	*****	*****	*****
U	10	12	1.00	0.04	0.08	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST 0 FOR SITE 5 WAS MADE ON 8/ 1/74 FROM 10:45 TO 11:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.0 MPH (0.89 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.4 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 65 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1500, 58(93), 8) AND (1658, 58(93), 17).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64            60    74        D B  20
500 E 1658             58       8       3      20 40             D 65 10  12  50
500 W 1500             58      17       3      20 40             D 65 10 108  50
ADD
500 W 1500             58       8       3      20 40             U 65 10  12  50
500 E 1658             58      17       3      20 40             U 65 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                              50
     -610.        0.       1219.          0.      0.0       40.2336    18.2880         6.
.002122133.002122133.002122133.002200436.002200436.002200436

     205.  0.894080          4.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              49.3776    1.5240
              79.8576    1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                              50
     -610.        0.       1219.          0.      0.0       40.2336    18.2880         6.
.002122133.002122133.002122133.002200436.002200436.002200436

     205.  0.894080          2.   600.0
0.001
               3.6576    1.5240
              18.8976    1.5240
              49.3776    1.5240
              79.8576    1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                 50
     3158.23.79  2.0  65.   0.   5.  12. 4     28.00
X                                                 50
     3158.23.79  2.0  65.   0.   5.  62. 4     28.00
X                                                 50
     3158.23.79  2.0  65.   0.   5. 162. 4     28.00
X                                                 50
     3158.23.79  2.0  65.   0.   5. 262. 4     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                 50
     3158.23.79  2.0  65.   0.   5.  12. 2     28.00
X                                                 50
     3158.23.79  2.0  65.   0.   5.  62. 2     28.00
X                                                 50
     3158.23.79  2.0  65.   0.   5. 162. 2     28.00
X                                                 50
     3158.23.79  2.0  65.   0.   5. 262. 2     28.00
```

TABLE 58

PREDICTIONS FOR TEST Q, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.60	1.19	0.94	1.90	1.50	2.53	2.30
D	5	62	0.90	1.03	0.70	1.60	1.10	1.68	1.30
D	5	162	0.50	0.79	0.43	1.10	0.80	1.32	1.00
D	5	262	0.20	0.63	0.31	0.90	0.70	1.17	0.80
U	5	12	1.10	0.06	0.13	*****	*****	*****	*****
U	5	62	0.0	0.0	0.0	*****	*****	*****	*****
U	5	362	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.90	0.03	0.07	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST P FOR SITE 5 WAS MADE ON 8/ 1/74 FROM 11:45 TO 12:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.4 MPH (1.07 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.5 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 75 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1358, 60(97), 10) AND (1570, 60(97), 6).
THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64                60   74      D B  24
5PD E 1570             60       6        3     20 40           D 75 10  12  50
5PD W 1358             60      10        3     20 40           D 75 10 108  50
ADD
5PU W 1358             60      10        3     20 40           U 75 10  12  50
5PU E 1570             60       6        3     20 40           U 75 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                              5P
   -610.        0.      1219.                 0.     0.0        40.2336     18.2880          6.
.001895236.001895236.001895236.001749351.001749351.001749351
     195.   1.072895          4.    600.0
0.001
               3.6576     1.5240
              18.8976     1.5240
              34.1376     1.5240
              49.3776     1.5240
              79.8576     1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                              5P
   -610.        0.      1219.                 0.     0.0        40.2336     18.2880          6.
.001895236.001895236.001895236.001749351.001749351.001749351
     195.   1.072895          2.    600.0
0.001
               3.6576     1.5240
              18.8976     1.5240
              34.1376     1.5240
              49.3776     1.5240
              79.8576     1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X                                                              5P
     2928.21.63  2.4   75.   0.   5.   12. 4     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.   62. 4     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.  112. 4     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.  162. 4     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.  262. 4     28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X                                                              5P
     2928.21.63  2.4   75.   0.   5.   12. 2     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.   62. 2     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.  112. 2     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.  162. 2     28.00
X                                                              5P
     2928.21.63  2.4   75.   0.   5.  262. 2     28.00
```

TABLE 59

PREDICTIONS FOR TEST E, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.50	0.93	0.77	1.30	1.00	1.66	1.50
D	5	62	0.70	0.80	0.56	1.00	0.60	1.11	0.90
D	5	112	0.40	0.70	0.43	0.90	0.50	0.95	0.70
D	5	162	0.30	0.62	0.35	0.70	0.40	0.87	0.60
D	5	262	0.0	0.50	0.25	0.60	0.30	0.77	0.50
U	5	12	1.00	0.0	0.02	*****	*****	*****	*****
U	5	62	0.20	0.0	0.0	*****	*****	*****	*****
U	5	362	0.0	0.0	0.0	*****	*****	*****	*****
U	10	12	0.70	0.0	0.01	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TEST Q FOR SITE 5 WAS MADE ON 8/ 1/74 FROM 12:45 TO 13:45 (MILITARY TIME). THE UPWIND AND DOWNWIND SOURCE LENGTHS FOR ALL LANE GROUPS WERE 2.0 AND 4.0 KILOFEET (0.6 AND 1.2 KILOMETERS), RESPECTIVELY. THE TURNER AND PASQUILL STABILITY CLASSES WERE D AND B, RESPECTIVELY. THE AVERAGE WIND SPEED WAS 2.0 MPH (0.89 M/S), AND THE BACKGROUND CO CONCENTRATION WAS 1.4 PPM. THE SOURCE HEIGHT WAS 0 FEET (0.0 METERS). THE ROAD/WIND ANGLE WAS 65 DEGREES. THE TRAFFIC DATA FOR THE UPWIND AND DOWNWIND LANE GROUPS IN (VPH, MPH (KM/HR), %HDV) WERE (1417, 60(97), 21) AND (1786, 60(97), 6).

THE MODEL INPUTS WERE:

AIRPOL-4 INPUTS, TURNER AND PASQUILL STABILITY CLASSES

```
          NORVIEW AVE. & I64          60   74       D B  20
5QD F 1786              60        6       3      20 40              D 65 10  12  50
5QD W 1417              60       21       3      20 40              D 65 10 108  50
ADD
5QU W 1417              60       21       3      20 40              U 65 10  12  50
5QU F 1786              60        6       3      20 40              U 65 10 108  50
END
```

HIWAY INPUTS, TURNER STABILITY CLASS

```
                                                 5Q
   -610.        0.      1219.        0.    0.0      40.2336   18.2880        6.
.002155982.002155982.002155982.002141089.002141089.002141089

    205.  0.894080        4.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             34.1376    1.5240
             49.3776    1.5240
             79.8576    1.5240
9999.0
```

HIWAY INPUTS, PASQUILL STABILITY CLASS

```
                                                 5Q
   -610.        0.      1219.        0.    0.0      40.2336   18.2880        6.
.002155982.002155982.002155982.002141089.002141089.002141089

    205.  0.894080        2.   600.0
0.001
              3.6576    1.5240
             18.8976    1.5240
             34.1376    1.5240
             49.3776    1.5240
             79.8576    1.5240
9999.0
```

CALAIR INPUTS, TURNER STABILITY CLASS

```
X
X  3203.23.32  2.0  65.  0.  5.  12. 4  5Q  28.00
X  3203.23.32  2.0  65.  0.  5.  62. 4  5Q  28.00
X  3203.23.32  2.0  65.  0.  5. 112. 4  5Q  28.00
X  3203.23.32  2.0  65.  0.  5. 162. 4  5Q  28.00
   3203.23.32  2.0  65.  0.  5. 262. 4  5Q  28.00
```

CALAIR INPUTS, PASQUILL STABILITY CLASS

```
X
X  3203.23.32  2.0  65.  0.  5.  12. 2  5Q  28.00
X  3203.23.32  2.0  65.  0.  5.  62. 2  5Q  28.00
X  3203.23.32  2.0  65.  0.  5. 112. 2  5Q  28.00
X  3203.23.32  2.0  65.  0.  5. 162. 2  5Q  28.00
   3203.23.32  2.0  65.  0.  5. 262. 2  5Q  28.00
```

TABLE 60

PREDICTIONS FOR TEST Q, SITE 5

UP/DOWN WIND	RECEPTOR HEIGHT FT	RECEPTOR DISTANCE FT	OBSERVED MINUS BACKGROUND PPM CO	AIRPOL-4 TURNER PPM CO	AIRPOL-4 PASQUILL PPM CO	HIWAY TURNER PPM CO	HIWAY PASQUILL PPM CO	CALAIR TURNER PPM CO	CALAIR PASQUILL PPM CO
D	5	12	1.80	1.19	0.94	1.90	1.50	2.51	2.30
D	5	62	1.00	1.03	0.70	1.60	1.10	1.67	1.30
D	5	112	0.40	0.89	0.54	1.30	0.90	1.44	1.10
D	5	162	0.30	0.79	0.43	1.10	0.80	1.31	1.00
D	5	262	0.10	0.63	0.31	0.90	0.70	1.17	0.80
U	5	12	1.10	0.07	0.14	*****	*****	*****	*****
U	5	62	0.20	0.0	0.0	*****	*****	*****	*****
U	5	362	0.0	0.0	0.0	*****	*****	*****	*****

NOTE: ASTERISKS (*****) INDICATE INABILITY TO PREDICT CO LEVELS.

TABLE 61

DOWNWIND ANALYSIS, SITE 5

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	76.00	76.00	64.00	76.00
AVG DEVATION	0.04	-0.15	0.55	0.67
AVG SQRD DEV	0.24	0.19	0.84	2.40
PROBLE ERROR	0.33	0.29	0.61	1.04
% CORR COEF	0.65	0.77	0.55	0.55
A, OB=A*P+B	0.86	1.14	0.37	0.21
B, OB=A*P+B	0.07	0.06	0.26	0.48
MINIMUM DEV	-1.36	-1.36	-1.21	-1.61
MAXIMUM DEV	1.08	0.83	2.17	7.80
DEVATN RANGE	2.44	2.19	3.38	9.41
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	2.70	2.70	2.40	2.70
OBSATN RANGE	2.70	2.70	2.40	2.70
SUM DEVATION	2.98	-11.34	35.10	51.05
SUM SQRD DEV	18.26	14.68	53.75	182.22
AVG OBSATION	0.79	0.79	0.72	0.79
AVG PREDTION	0.83	0.64	1.27	1.46
VAR DEVATION	0.24	0.17	0.55	1.97
VAR PREDTION	0.24	0.19	0.77	2.73
VAR OBSRVATN	0.41	0.41	0.34	0.41
AVG D/AVG OB	0.05	-0.19	0.76	0.85
AVG P/AVG OB	1.05	0.81	1.76	1.85
MIN D/AVG OB	-1.72	-1.72	-1.67	-2.04
MAX D/AVG OB	1.37	1.05	2.99	9.86
RNG D/RNG OB	0.90	0.81	1.41	3.49

TABLE 62

UPWIND ANALYSIS, SITE 5

STATISTICS	VAI	VAP
DATA POINTS	57.00	57.00
AVG DEVATION	-0.33	-0.31
AVG SQRD DEV	0.29	0.26
PROBLE ERROR	0.36	0.34
% CORR COEF	0.40	0.49
A, OB=A*P+B	1.53	1.56
B, OB=A*P+B	0.31	0.28
MINIMUM DEV	-1.30	-1.30
MAXIMUM DEV	0.27	0.27
DEVATN RANGE	1.57	1.57
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	1.60	1.60
OBSATN RANGE	1.60	1.60
SUM DEVATION	-18.80	-17.71
SUM SQRD DEV	16.36	14.87
AVG OBSATION	0.37	0.37
AVG PREDTION	0.04	0.06
VAR DEVATION	0.18	0.17
VAR PREDTION	0.01	0.02
VAR OBSRVATN	0.21	0.21
AVG D/AVG OB	-0.89	-0.84
AVG P/AVG OB	0.11	0.16
MIN D/AVG OB	-3.50	-3.50
MAX D/AVG OB	0.73	0.73
RNG D/RNG OB	0.98	0.98

TABLE 63

UPWIND AND DOWNWIND ANALYSIS, SITE 5

STATISTICS	VAI	VAP
DATA POINTS	133.00	133.00
AVG DEVATION	-0.12	-0.22
AVG SQRD DEV	0.26	0.22
PROBLE ERROR	0.34	0.32
% CORR COEF	0.63	0.72
A, OB=A*P+B	0.70	0.98
B, OB=A*P+B	0.26	0.23
MINIMUM DEV	-1.36	-1.36
MAXIMUM DEV	1.08	0.83
DEVATN RANGE	2.44	2.19
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	2.70	2.70
OBSATN RANGE	2.70	2.70
SUM DEVATION	-15.82	-29.05
SUM SQRD DEV	34.62	29.55
AVG OBSATION	0.61	0.61
AVG PREDTION	0.49	0.39
VAR DEVATION	0.25	0.18
VAR PREDTION	0.29	0.20
VAR OBSRVATN	0.37	0.37
AVG D/AVG OB	-0.19	-0.36
AVG P/AVG OB	0.81	0.64
MIN D/AVG OB	-2.22	-2.22
MAX D/AVG OB	1.77	1.36
RNG D/RNG OB	0.90	0.81

ALL SITES, DATA AND PERFORMANCE STATISTICS

This section presents a summary of all traffic, meteorological, and physical data for the five study sites in the AIRPOL project. Table 64 contains percentage breakdowns of the traffic and meteorological parameters observed at the study sites. Table 65 summarizes the ranges of the observed physical, traffic, and meteorological parameters at the study sites. Tables 66, 67, and 68 contain the downwind, upwind, and upwind and downwind performance statistics, respectively, of the Virginia (Turner and Pasquill) and California and EPA (Turner only) prediction models relative to the total data set for all study sites.

TABLE 64

Percentage Breakdown of Experimental Conditions

Parameter	Range	% of Total Data	
Wind Direction, degrees	$0 \leq \alpha \leq 30$	27	
	$30 < \alpha \leq 60$	35	
	$60 < \alpha \leq 90$	38	
Wind Speed, mph	$0.0 \leq \mu \leq 2.0$	21	
	$2.0 < \mu \leq 4.0$	31	
	$4.0 < \mu \leq 6.0$	25	
	$6.0 < \mu$	23	
Atmospheric Stability Class		Turner	Pasquill
	A	6	10
	B	29	63
	C	17	17
	D	48	10
Total Traffic Volume, vph	$2,000 \leq v \leq 5,000$	58	
	$5,000 < v \leq 8,000$	40	
	$8,000 < v$	2	
Traffic Speed, mph	$35 \leq s \leq 45$	4	
	$45 < s \leq 55$	47	
	$55 < s \leq 62$	49	
Vehicle Mix, % hdv	$0 \leq h \leq 10$	65	
	$10 < h \leq 20$	34	
	$20 < h$	1	

TABLE 65

Summary of Site Descriptive Data and Observed Traffic and Meteorological Data

Item		Site 1	Site 2	Site 3	Site 4	Site 5
Subject Highway		I495	I64	I95	I264	I64
City/County		Fairfax	Norfolk	Fairfax	Norfolk	Norfolk
U.S.G.S. Topographic Quadrant, 7.5 Minute Map		Alexandria, Va., D.C., Md.	Kempsville, Virginia	Annandale, Virginia	Kempsville, Virginia	Little Creek Virginia
UTM Map Coordinates	mN	4,296,690	4,081,070	4,296,520	4,078,230	4,083,960
	mE	318,580	393,460	312,900	389,080	390,040
Relative Highway Elevation, ft (m)		0 (0)	0 (0)	0 (0)	35 (10.7)	0 (0)
Number of Lanes		3,3 = 6	3,3 = 6	4,2,4 = 10	3,3 = 6	3,3 = 6
Median Width, ft (m)		37 (11.3)	60 (18.3)	21 (6.4) each	42 (12.8)	60 (18.3)
General Highway Direction		E,W	N,S	N,S	E,W	N,S
Land Use		low density residential	agricultural (two schools)	light commercial	low density residential & light industrial	low density residential
Distance to Nearest Significant External Source, ft (m)		2,500 (750)	1,700 (500)	1,000 (300)	2,800 (850)	2,000 (600)
Traffic Volume Range, vph	Low	2,646	3,288	4,510	3,030	2,200
	High	7,910	5,190	8,250	5,060	6,650
Traffic Speed Range, mph (km/hr)	Low	38 (61)	51 (82)	53 (85)	50 (80)	45 (72)
	High	62 (100)	58 (93)	54 (87)	56 (90)	60 (97)
% hov Range	Low	5	5	4	1	2
	High	22	9	11	15	21
Road/Wind Angle Range, degrees	Low	4	20	10	54	21
	High	86	20	90	85	88
Wind Speed Range, mph (m/s)	Low	0.4 (0.18)	4.2 (1.88)	1.3 (0.58)	4.9 (2.19)	0.6 (0.27)
	High	10.8 (4.83)	6.9 (3.08)	4.6 (2.06)	7.2 (3.22)	8.5 (3.80)
Turner Stability Range	Low	A	B	A	B	B
	High	D	C	D	D	D
Pasquill Stability Range	Low	A	B	A	A	B
	High	D	C	B	C	C

TABLE 66

DOWNWIND ANALYSIS, ALL SITES

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	254.00	254.00	225.00	254.00
AVG DEVATION	-0.22	-0.45	0.75	0.55
AVG SQRD DEV	1.28	1.16	5.02	7.22
PROBLE ERROR	0.76	0.72	1.50	1.80
% CORR COEF	0.42	0.51	0.39	0.31
A, OB=A*P+B	0.54	0.96	0.17	0.13
B, OB=A*P+B	0.70	0.49	0.83	1.02
MINIMUM DEV	-4.71	-4.71	-3.94	-4.36
MAXIMUM DEV	3.81	1.41	13.38	20.05
DEVATN RANGE	8.52	6.12	17.32	24.41
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	6.50	6.50	5.40	6.50
OBSATN RANGE	6.50	6.50	5.40	6.50
SUM DEVATION	-56.81	-115.12	169.26	140.39
SUM SQRD DEV	325.98	294.69	1129.84	1832.75
AVG OBSATION	1.25	1.25	1.16	1.25
AVG PREDTION	1.03	0.80	1.91	1.80
VAR DEVATION	1.24	0.96	4.48	6.94
VAR PREDTION	0.80	0.38	5.28	7.60
VAR OBSRVATN	1.30	1.30	1.01	1.30
AVG D/AVG OB	-0.18	-0.36	0.65	0.44
AVG P/AVG OB	0.82	0.64	1.65	1.44
MIN D/AVG OB	-3.76	-3.76	-3.41	-3.48
MAX D/AVG OB	3.04	1.13	11.58	16.02
RNG D/RNG OB	1.31	0.94	3.21	3.76

TABLE 67

UPWIND ANALYSIS, ALL SITES

STATISTICS	VAI	VAP
DATA POINTS	182.00	182.00
AVG DEVATION	-0.31	-0.31
AVG SQRD DEV	0.58	0.50
PROBLE ERROR	0.51	0.47
% CORR COEF	0.62	0.69
A, OB=A*P+B	0.85	1.08
B, OB=A*P+B	0.35	0.29
MINIMUM DEV	-3.94	-3.94
MAXIMUM DEV	3.15	1.20
DEVATN RANGE	7.09	5.14
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	4.40	4.40
OBSATN RANGE	4.40	4.40
SUM DEVATION	-56.11	-56.64
SUM SQRD DEV	104.82	91.18
AVG OBSATION	0.59	0.59
AVG PREDTION	0.29	0.28
VAR DEVATION	0.48	0.41
VAR PREDTION	0.41	0.32
VAR OBSRVATN	0.77	0.77
AVG D/AVG OB	-0.52	-0.52
AVG P/AVG OB	0.48	0.48
MIN D/AVG OB	-6.63	-6.63
MAX D/AVG OB	5.30	2.02
RNG D/RNG OB	1.61	1.17

TABLE 68

UPWIND AND DOWNWIND ANALYSIS, ALL SITES

STATISTICS	VAI	VAP
DATA POINTS	436.00	436.00
AVG DEVATION	-0.26	-0.39
AVG SQRD DEV	0.99	0.89
PROBLE ERROR	0.67	0.63
% CORR COEF	0.54	0.62
A, OB=A*P+B	0.67	1.04
B, OB=A*P+B	0.50	0.37
MINIMUM DEV	-4.71	-4.71
MAXIMUM DEV	3.81	1.41
DEVATN RANGE	8.52	6.12
MINIMUM OBS	0.0	0.0
MAXIMUM OBS	6.50	6.50
OBSATN RANGE	6.50	6.50
SUM DEVATION	-112.92	-171.76
SUM SQRD DEV	430.78	385.86
AVG OBSATION	0.98	0.98
AVG PREDTION	0.72	0.58
VAR DEVATION	0.92	0.73
VAR PREDTION	0.77	0.42
VAR OBSRVATN	1.18	1.18
AVG D/AVG OB	-0.27	-0.40
AVG P/AVG OB	0.73	0.60
MIN D/AVG OB	-4.82	-4.82
MAX D/AVG OB	3.90	1.44
RNG D/RNG OB	1.31	0.94

DOWNWIND PERFORMANCE STATISTICS RELATIVE TO METEOROLOGY AND GEOMETRY

This section presents the performance statistics of the Virginia, California, and EPA models relative to several categories of meteorological and geometric parameters based on the total downwind data set for all study sites. Tables 69 and 70 contain the performance statistics relative to wind speeds of ws $\geq$ 2.0 mph (0.89 m/s) and ws $<$ 2.0 mph (0.89 m/s), respectively. Tables 71, 72, and 73 contain the performance statistics relative to road/wind angles of $0^{o} \leq \alpha \leq 30^{o}$, $30^{o} < \alpha \leq 60^{o}$, and $60^{o} < \alpha \leq 90^{o}$, respectively. Tables 74 through 81 contain the performance statistics relative to stability classes (Turner and Pasquill) A, B, C, and D, respectively. Tables 82 and 83 contain the performance statistics relative to the cases in which the Turner and Pasquill determined stability classes are identical and the cases in which they are different, respectively. Tables 84 and 85 contain the performance statistics for the California and EPA models relative to the use of Turner determined stability classes (recommended by the California Division of Highways and the EPA) and the use of Pasquill determined stability classes, respectively. Tables 86 and 87 contain the performance statistics of the Virginia, California, and EPA models relative to source/receptor distances of SRD $\leq$ 100 feet (30 meters) and SRD $>$ 100 feet (30 meters), respectively. Tables 88, 89, and 90 contain the performance statistics relative to receptors 5 feet (1.5 meters), 10 feet (3.0 meters), and 45 feet (13.7 meters) above the surrounding terrain, respectively. (CO levels at receptor points 45 feet (13.7 meters) above the surrounding terrain were measured for the elevated site, Site 4, only, and the 10 foot (3.0 meter) and 45 foot (13.7 meter) receptors were always located adjacent to their subject roadways.) Tables 91 and 92 contain the performance statistics relative to the at-grade and elevated sites, respectively.

TABLE 69

DOWNWIND ANALYSIS, ALL SITES, WIND SPEED .GE. 2.0 MPH

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	225.00	225.00	225.00	225.00
AVG DEVATION	-0.18	-0.44	0.75	0.04
AVG SQRD DEV	1.14	1.00	5.02	1.81
PROBLE ERROR	0.72	0.67	1.50	0.90
% CORR COEF	0.39	0.45	0.39	0.33
A, OB=A*P+B	0.44	0.83	0.17	0.26
B, OB=A*P+B	0.73	0.56	0.83	0.84
MINIMUM DEV	-4.43	-4.43	-3.94	-4.36
MAXIMUM DEV	3.81	1.23	13.38	6.70
DEVATN RANGE	8.24	5.66	17.32	11.06
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	5.40	5.40	5.40	5.40
OBSATN RANGE	5.40	5.40	5.40	5.40
SUM DEVATION	-40.71	-98.33	169.26	9.96
SUM SQRD DEV	256.99	225.35	1129.84	406.48
AVG OBSATION	1.16	1.16	1.16	1.16
AVG PREDTION	0.97	0.72	1.91	1.20
VAR DEVATION	1.11	0.81	4.48	1.81
VAR PREDTION	0.80	0.29	5.28	1.67
VAR OBSRVATN	1.01	1.01	1.01	1.01
AVG D/AVG OB	-0.16	-0.38	0.65	0.04
AVG P/AVG OB	0.84	0.62	1.65	1.04
MIN D/AVG OB	-3.84	-3.84	-3.41	-3.77
MAX D/AVG OB	3.30	1.06	11.58	5.80
RNG D/RNG OB	1.53	1.05	3.21	2.05

TABLE 70

DOWNWIND ANALYSIS, ALL SITES, WIND SPEED .LT. 2.0 MPH

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	29.00	29.00	0.0	29.00
AVG DEVATION	-0.56	-0.58		4.50
AVG SQRD DEV	2.38	2.39		49.18
PROBLE ERROR	1.03	1.04		4.70
% CORR COEF	0.55	0.56		0.14
A, OB=A*P+B	1.26	1.24		0.04
B, OB=A*P+B	0.17	0.24		1.71
MINIMUM DEV	-4.71	-4.71		-2.45
MAXIMUM DEV	1.41	1.41		20.05
DEVATN RANGE	6.12	6.12		22.50
MINIMUM OBS	0.0	0.0		0.0
MAXIMUM OBS	6.50	6.50		6.50
OBSATN RANGE	6.50	6.50		6.50
SUM DEVATION	-16.10	-16.79		130.43
SUM SQRD DEV	69.00	69.35		1426.29
AVG OBSATION	2.00	2.00		2.00
AVG PREDTION	1.44	1.42		6.50
VAR DEVATION	2.15	2.13		29.99
VAR PREDTION	0.58	0.61		29.58
VAR OBSRVATN	3.04	3.04		3.04
AVG D/AVG OB	-0.28	-0.29		2.25
AVG P/AVG OB	0.72	0.71		3.25
MIN D/AVG OB	-2.36	-2.36		-1.23
MAX D/AVG OB	0.71	0.71		10.03
RNG D/RNG OB	0.94	0.94		3.46

TABLE 71

DOWNWIND ANALYSIS, ALL SITES, 0 .LE. ALPHA .LE. 30 DEGREES

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	69.00	69.00	67.00	69.00
AVG DEVATION	0.20	-0.36	2.40	0.84
AVG SQRD DEV	1.25	0.77	14.40	4.11
PROBLE ERROR	0.75	0.59	2.54	1.36
% CORR COEF	0.58	0.69	0.56	0.61
A, OB=A*P+B	0.50	1.06	0.17	0.29
B, OB=A*P+B	0.56	0.30	0.65	0.70
MINIMUM DEV	-2.84	-2.84	-0.65	-2.01
MAXIMUM DEV	3.81	1.07	13.38	6.70
DEVATN RANGE	6.65	3.91	14.03	8.71
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	4.50	4.50	4.20	4.50
OBSATN RANGE	4.50	4.50	4.20	4.50
SUM DEVATION	13.93	-24.90	161.06	58.16
SUM SQRD DFV	85.95	53.39	964.68	283.55
AVG OBSATION	1.34	1.34	1.26	1.34
AVG PREDTION	1.54	0.98	3.66	2.18
VAR DEVATION	1.22	0.65	8.75	3.45
VAR PREDTION	1.63	0.52	11.58	5.36
VAR OBSRVATN	1.23	1.23	1.03	1.23
AVG D/AVG OB	0.15	-0.27	1.91	0.63
AVG P/AVG OB	1.15	0.73	2.91	1.63
MIN D/AVG OB	-2.12	-2.12	-0.52	-1.50
MAX D/AVG OB	2.84	0.80	10.62	5.00
RNG D/RNG OB	1.48	0.87	3.34	1.94

TABLE 72

DOWNWIND ANALYSIS, ALL SITES, 30 .LT. ALPHA .LE. 60 DEGREES

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	90.00	90.00	72.00	90.00
AVG DEVATION	-0.25	-0.37	0.47	1.09
AVG SQRD DEV	1.43	1.39	1.11	14.43
PROBLE ERROR	0.80	0.79	0.71	2.54
% CORR COEF	0.39	0.47	0.46	0.21
A, OB=A*P+B	0.87	1.06	0.50	0.07
B, OB=A*P+B	0.39	0.31	0.31	1.13
MINIMUM DEV	-4.71	-4.71	-3.03	-3.81
MAXIMUM DEV	1.41	1.41	2.12	20.05
DEVATN RANGE	6.12	6.12	5.15	23.86
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	6.50	6.50	4.50	6.50
OBSATN RANGE	6.50	6.50	4.50	6.50
SUM DEVATION	-22.93	-33.02	33.61	97.66
SUM SQRD DEV	128.69	124.86	79.99	1298.32
AVG OBSATION	1.30	1.30	1.08	1.30
AVG PREDTION	1.05	0.94	1.55	2.39
VAR DEVATION	1.38	1.27	0.91	13.40
VAR PREDTION	0.33	0.32	0.79	13.72
VAR OBSRVATN	1.62	1.62	0.90	1.62
AVG D/AVG OB	-0.20	-0.28	0.43	0.83
AVG P/AVG OB	0.80	0.72	1.43	1.83
MIN D/AVG OB	-3.62	-3.62	-2.80	-2.93
MAX D/AVG OB	1.08	1.08	1.96	15.40
RNG D/RNG OB	0.94	0.94	1.14	3.67

TABLE 73

DOWNWIND ANALYSIS, ALL SITES, 60 .LT. ALPHA .LE. 90 DEGREES

SIATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	95.00	95.00	86.00	95.00
AVG DEVATION	-0.50	-0.60	-0.30	-0.16
AVG SQRD DEV	1.17	1.23	0.99	2.64
PROBLE ERROR	0.73	0.74	0.67	1.09
% CORR COEF	0.39	0.42	0.48	0.27
A, OB=A*P+B	0.70	0.89	0.65	0.18
B, OB=A*P+B	0.69	0.66	0.59	0.96
MINIMUM DEV	-4.43	-4.43	-3.94	-4.36
MAXIMUM DEV	1.00	0.83	2.17	7.80
DEVATN RANGE	5.43	5.26	6.11	12.16
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	5.40	5.40	5.40	5.40
OBSATN RANGE	5.40	5.40	5.40	5.40
SUM DEVATION	-47.81	-57.20	-25.41	-15.43
SUM SQRD DEV	111.35	116.45	85.19	250.90
AVG OBSATION	1.14	1.14	1.13	1.14
AVG PREDTION	0.64	0.54	0.84	0.98
VAR DEVATION	0.93	0.87	0.91	2.64
VAR PREDTION	0.32	0.23	0.58	2.47
VAR OBSRVATN	1.06	1.06	1.09	1.06
AVG D/AVG OB	-0.44	-0.53	-0.26	-0.14
AVG P/AVG OB	0.56	0.47	0.74	0.86
MIN D/AVG OB	-3.89	-3.89	-3.48	-3.83
MAX D/AVG OB	0.88	0.73	1.91	6.85
RNG D/RNG OB	1.01	0.97	1.13	2.25

TABLE 74

DOWNWIND ANALYSIS, ALL SITES, TURNER CLASS = A

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	13.00		4.00	13.00
AVG DEVATION	-1.54		2.27	0.13
AVG SQRD DEV	4.60		5.36	1.33
PROBLE ERROR	1.44		1.55	0.77
% CORR COEF	0.88		0.84	0.82
A, OB=A*P+B	3.25		0.76	0.84
B, OB=A*P+B	-0.80		-1.50	0.31
MINIMUM DEV	-4.71		1.86	-2.45
MAXIMUM DEV	0.16		3.01	2.18
DEVATN RANGE	4.87		1.15	4.63
MINIMUM OBS	0.0		0.0	0.0
MAXIMUM OBS	6.50		1.80	6.50
OBSATN RANGE	6.50		1.80	6.50
SUM DEVATION	-20.05		9.09	1.66
SUM SQRD DEV	59.85		21.43	17.32
AVG OBSATION	2.58		0.95	2.58
AVG PREDTION	1.04		3.22	2.71
VAR DEVATION	2.41		0.26	1.43
VAR PREDTION	0.29		0.87	3.82
VAR OBSRVATN	4.02		0.71	4.02
AVG D/AVG OB	-0.60		2.39	0.05
AVG P/AVG OB	0.40		3.39	1.05
MIN D/AVG OB	-1.82		1.96	-0.95
MAX D/AVG OB	0.06		3.17	0.84
RNG D/RNG OB	0.75		0.64	0.71

TABLE 75

DOWNWIND ANALYSIS, ALL SITES, PASQUILL CLASS = A

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS		25.00		
AVG DEVATION		-1.11		
AVG SQRD DEV		2.89		
PROBLE ERROR		1.14		
% CORR COEF		0.81		
A, OB=A*P+B		2.49		
B, OB=A*P+B		0.01		
MINIMUM DEV		-4.71		
MAXIMUM DEV		1.03		
DEVATN RANGE		5.74		
MINIMUM OBS		0.0		
MAXIMUM OBS		6.50		
OBSATN RANGE		6.50		
SUM DEVATION		-27.81		
SUM SQRD DEV		72.35		
AVG OBSATION		1.86		
AVG PREDTION		0.74		
VAR DEVATION		1.73		
VAR PREDTION		0.32		
VAR OBSRVATN		2.99		
AVG D/AVG OB		-0.60		
AVG P/AVG OB		0.40		
MIN D/AVG OB		-2.54		
MAX D/AVG OB		0.55		
RNG D/RNG OB		0.88		

TABLE 76

DOWNWIND ANALYSIS, ALL SITES, TURNER CLASS = B

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	70.00		53.00	70.00
AVG DEVATION	-0.54		-0.08	1.23
AVG SQRD DEV	1.52		1.53	21.18
PROBLE ERROR	0.83		0.83	3.08
% CORR COEF	0.47		0.48	0.25
A, OB=A*P+B	0.79		0.48	0.07
B, OB=A*P+B	0.70		0.71	1.16
MINIMUM DEV	-4.43		-3.94	-4.36
MAXIMUM DEV	1.41		2.44	20.05
DEVATN RANGE	5.84		6.38	24.41
MINIMUM OBS	0.0		0.0	0.0
MAXIMUM OBS	4.60		4.60	4.60
OBSATN RANGE	4.60		4.60	4.60
SUM DEVATION	-37.46		-4.40	85.82
SUM SQRD DEV	106.21		81.14	1482.33
AVG OBSATION	1.33		1.28	1.33
AVG PREDTION	0.80		1.20	2.56
VAR DEVATION	1.25		1.55	19.96
VAR PREDTION	0.55		1.52	21.33
VAR OBSRVATN	1.57		1.49	1.57
AVG D/AVG OB	-0.40		-0.06	0.92
AVG P/AVG OB	0.60		0.94	1.92
MIN D/AVG OB	-3.32		-3.07	-3.27
MAX D/AVG OB	1.06		1.90	15.04
RNG D/RNG OB	1.27		1.39	5.31

TABLE 77

DOWNWIND ANALYSIS, ALL SITES, PASQUILL CLASS = B

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS		154.00		
AVG DEVATION		-0.57		
AVG SQRD DEV		1.24		
PROBLE ERROR		0.75		
% CORR COEF		0.52		
A, OB=A*P+B		0.96		
B, OB=A*P+B		0.60		
MINIMUM DEV		-4.43		
MAXIMUM DEV		1.41		
DEVATN RANGE		5.84		
MINIMUM OBS		0.0		
MAXIMUM OBS		5.40		
OBSATN RANGE		5.40		
SUM DEVATION		-88.22		
SUM SQRD DEV		191.56		
AVG OBSATION		1.30		
AVG PREDTION		0.73		
VAR DEVATION		0.92		
VAR PREDTION		0.38		
VAR OBSRVATN		1.27		
AVG D/AVG OB		-0.44		
AVG P/AVG OB		0.56		
MIN D/AVG OB		-3.40		
MAX D/AVG OB		1.08		
RNG D/RNG OB		1.08		

TABLE 78

DOWNWIND ANALYSIS. ALL SITES. TURNER CLASS = C

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	46.00		43.00	46.00
AVG DEVATION	-0.22		0.43	-0.24
AVG SQRD DEV	0.49		1.95	0.80
PROBLE ERROR	0.47		0.94	0.60
% CORR COEF	0.62		0.54	0.38
A. OB=A*P+B	0.74		0.29	0.43
B. OB=A*P+B	0.45		0.69	0.74
MINIMUM DEV	-2.14		-1.75	-2.08
MAXIMUM DEV	1.07		4.64	1.91
DEVATN RANGE	3.21		6.39	3.99
MINIMUM OBS	0.0		0.0	0.0
MAXIMUM OBS	4.20		4.20	4.20
OBSATN RANGE	4.20		4.20	4.20
SUM DEVATION	-9.95		18.43	-10.94
SUM SQRD DEV	22.49		83.79	36.71
AVG OBSATION	1.12		1.13	1.12
AVG PREDTION	0.91		1.56	0.89
VAR DEVATION	0.45		1.81	0.76
VAR PREDTION	0.48		2.56	0.52
VAR OBSRVATN	0.69		0.71	0.69
AVG D/AVG OB	-0.19		0.38	-0.21
AVG P/AVG OB	0.81		1.38	0.79
MIN D/AVG OB	-1.90		-1.55	-1.85
MAX D/AVG OB	0.95		4.10	1.70
RNG D/RNG OB	0.76		1.52	0.95

TABLE 79

DOWNWIND ANALYSIS, ALL SITES, PASQUILL CLASS = C

STATISTICS	VAT	VAP	CAL	EPA
DATA POINTS		46.00		
AVG DEVATION		-0.08		
AVG SQRD DEV		0.41		
PROBLE ERROR		0.43		
% CORR COEF		0.66		
A, OB=A*P+B		0.76		
B, OB=A*P+B		0.29		
MINIMUM DEV		-1.62		
MAXIMUM DEV		1.07		
DEVATN RANGE		2.69		
MINIMUM OBS		0.0		
MAXIMUM OBS		4.20		
OBSATN RANGE		4.20		
SUM DEVATION		-3.87		
SUM SQRD DEV		18.96		
AVG OBSATION		0.94		
AVG PREDTION		0.85		
VAR DEVATION		0.41		
VAR PREDTION		0.52		
VAR OBSRVATN		0.68		
AVG D/AVG OB		-0.09		
AVG P/AVG OB		0.91		
MIN D/AVG OB		-1.73		
MAX D/AVG OB		1.14		
RNG D/RNG OB		0.64		

TABLE 80

DOWNWIND ANALYSIS, ALL SITES, TURNER CLASS = D

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	125.00		125.00	125.00
AVG DEVATION	0.09		1.17	0.51
AVG SQRD DEV	1.10		7.55	2.37
PROBLE ERROR	0.70		1.84	1.03
% CORR COEF	0.45		0.43	0.38
A, OB=A*P+B	0.42		0.15	0.24
B, OB=A*P+B	0.61		0.77	0.72
MINIMUM DEV	-4.07		-3.03	-3.81
MAXIMUM DEV	3.81		13.38	6.70
DEVATN RANGE	7.88		16.41	10.51
MINIMUM OBS	0.0		0.0	0.0
MAXIMUM OBS	5.40		5.40	5.40
OBSATN RANGE	5.40		5.40	5.40
SUM DEVATION	10.65		146.14	63.85
SUM SQRD DEV	137.43		943.49	296.40
AVG OBSATION	1.11		1.11	1.11
AVG PREDTION	1.20		2.28	1.63
VAR DEVATION	1.10		6.23	2.13
VAR PREDTION	1.06		7.57	2.33
VAR OBSRVATN	0.93		0.93	0.93
AVG D/AVG OB	0.08		1.05	0.46
AVG P/AVG OB	1.08		2.05	1.46
MIN D/AVG OB	-3.65		-2.72	-3.42
MAX D/AVG OB	3.42		12.01	6.01
RNG D/RNG OB	1.46		3.04	1.95

TABLE 81

DOWNWIND ANALYSIS, ALL SITES, PASQUILL CLASS = D

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS		29.00		
AVG DEVATION		0.16		
AVG SQRD DEV		0.41		
PROBLE ERROR		0.43		
% CORR COEF		0.62		
A, OB=A*P+B		1.48		
B, OB=A*P+B		-0.71		
MINIMUM DEV		-1.92		
MAXIMUM DEV		1.23		
DEVATN RANGE		3.15		
MINIMUM OBS		0.0		
MAXIMUM OBS		3.20		
OBSATN RANGE		3.20		
SUM DEVATION		4.78		
SUM SQRD DEV		11.84		
AVG OBSATION		0.97		
AVG PREDTION		1.13		
VAR DEVATION		0.39		
VAR PREDTION		0.10		
VAR OBSRVATN		0.60		
AVG D/AVG OB		0.17		
AVG P/AVG OB		1.17		
MIN D/AVG OB		-1.99		
MAX D/AVG OB		1.27		
RNG D/RNG OB		0.98		

TABLE 82

DOWNWIND ANALYSIS, ALL SITES, TURNER CLASS = PASQUILL CLASS

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	117.00	117.00	91.00	117.00
AVG DEVATION	-0.43	-0.43	0.35	0.81
AVG SQRD DEV	1.51	1.51	1.82	13.02
PROBLE ERROR	0.82	0.82	0.91	2.42
% CORR COEF	0.48	0.48	0.49	0.27
A, OB=A*P+B	0.91	0.91	0.37	0.10
B, OB=A*P+B	0.52	0.52	0.66	1.22
MINIMUM DEV	-4.71	-4.71	-3.94	-4.36
MAXIMUM DEV	1.41	1.41	4.64	20.05
DEVATN RANGE	6.12	6.12	8.58	24.41
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	6.50	6.50	4.60	6.50
OBSATN RANGE	6.50	6.50	4.60	6.50
SUM DEVATION	-49.92	-49.92	31.71	94.19
SUM SQRD DEV	176.89	176.89	166.03	1522.99
AVG OBSATION	1.44	1.44	1.25	1.44
AVG PREDTION	1.02	1.02	1.60	2.25
VAR DEVATION	1.34	1.34	1.72	12.48
VAR PREDTION	0.48	0.48	2.06	13.38
VAR OBSRVATN	1.73	1.73	1.17	1.73
AVG D/AVG OB	-0.30	-0.30	0.28	0.56
AVG P/AVG OB	0.70	0.70	1.28	1.56
MIN D/AVG OB	-3.27	-3.27	-3.15	-3.02
MAX D/AVG OB	0.98	0.98	3.71	13.91
RNG D/RNG OB	0.94	0.94	1.87	3.76

TABLE 83

DOWNWIND ANALYSIS, ALL SITES, TURNER .NE. PASQUILL CLASS

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	137.00	137.00	134.00	137.00
AVG DEVIATION	-0.05	-0.48	1.03	0.34
AVG ABS DEV	1.09	0.86	7.19	2.26
PROBUB ERROR	0.70	0.62	1.80	1.01
R CORR COEF	0.44	0.53	0.41	0.39
A1 PARAMETER	0.40	1.07	0.14	0.24
A2 PARAMETER	0.67	0.43	0.79	0.75
MINIMUM DEV	-4.07	-4.09	-3.03	-3.81
MAXIMUM DEV	3.81	1.03	13.38	6.70
DEVIATN RANGE	7.88	5.12	16.41	10.51
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	5.40	5.40	5.40	5.40
OBSATN RANGE	5.40	5.40	5.40	5.40
SUM DEVIATION	-6.89	-65.20	137.55	46.20
SUM SQRD DEV	149.10	117.81	963.82	309.77
AVG OBSATION	1.09	1.09	1.09	1.09
AVG PREDTION	1.04	0.61	2.12	1.43
VAR DEVIATION	1.09	0.64	6.19	2.16
VAR PREDTION	1.08	0.22	7.40	2.42
VAR COVARATN	0.89	0.89	0.90	0.89
AVG D/AVG OB	-0.05	-0.44	0.94	0.31
AVG P/AVG OB	0.95	0.56	1.94	1.31
MIN D/AVG OB	-3.74	-3.76	-2.78	-3.50
MAX D/AVG OB	3.50	0.95	12.26	6.15
RMS D/AVG OB	1.46	0.95	3.04	1.95

TABLE 84

DOWNWIND ANALYSIS. ALL SITES. TURNER CLASS

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS			225.00	254.00
AVG DEVATION			0.75	0.55
AVG SQRD DEV			5.02	7.22
PROBLE ERROR			1.50	1.80
% CORR COEF			0.39	0.31
A, OB=A*P+B			0.17	0.13
B, OB=A*P+B			0.83	1.02
MINIMUM DEV			-3.94	-4.36
MAXIMUM DEV			13.38	20.05
DEVATN RANGE			17.32	24.41
MINIMUM OBS			0.0	0.0
MAXIMUM OBS			5.40	6.50
OBSATN RANGE			5.40	6.50
SUM DEVATION			169.26	140.39
SUM SQRD DEV			1129.84	1832.75
AVG OBSATION			1.16	1.25
AVG PREDTION			1.91	1.80
VAR DEVATION			4.48	6.94
VAR PREDTION			5.28	7.60
VAR OBSRVATN			1.01	1.30
AVG D/AVG OB			0.65	0.44
AVG P/AVG OB			1.65	1.44
MIN D/AVG OB			-3.41	-3.48
MAX D/AVG OB			11.58	16.02
RNG D/RNG OB			3.21	3.76

TABLE 85

DOWNWIND ANALYSIS, ALL SITES, PASQUILL CLASS

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS			225.00	254.00
AVG DEVATION			0.65	0.24
AVG SQRD DEV			3.71	6.41
PROBLE ERROR			1.29	1.70
% CORR COEF			0.39	0.31
A, OB=A*P+B			0.20	0.13
B, OB=A*P+B			0.79	1.05
MINIMUM DEV			-3.94	-4.36
MAXIMUM DEV			9.18	20.05
DEVATN RANGE			13.12	24.41
MINIMUM OBS			0.0	0.0
MAXIMUM OBS			5.40	6.50
OBSATN RANGE			5.40	6.50
SUM DEVATION			146.77	61.60
SUM SQRD DEV			834.24	1626.90
AVG OBSATION			1.16	1.25
AVG PREDTION			1.81	1.49
VAR DEVATION			3.30	6.37
VAR PREDTION			3.84	6.91
VAR OBSRVATN			1.01	1.30
AVG D/AVG OB			0.56	0.19
AVG P/AVG OB			1.56	1.19
MIN D/AVG OB			-3.41	-3.48
MAX D/AVG OB			7.95	16.02
RNG D/RNG OB			2.43	3.76

TABLE 86

DOWNWIND ANALYSIS, ALL SITES, RECEPTOR DISTANCE .LE. 100 FEET

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	130.00	130.00	113.00	130.00
AVG DEVATION	-0.50	-0.76	0.91	0.49
AVG SQRD DEV	2.13	1.97	8.34	10.85
PROBLE ERROR	0.98	0.94	1.94	2.21
% CORR COEF	0.30	0.36	0.28	0.30
A, OB=A*P+B	0.35	0.67	0.11	0.11
B, OB=A*P+B	1.39	1.13	1.43	1.61
MINIMUM DEV	-4.71	-4.71	-3.94	-4.36
MAXIMUM DEV	3.81	1.41	13.38	20.05
DEVATN RANGE	8.52	6.12	17.32	24.41
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	6.50	6.50	5.40	6.50
OBSATN RANGE	6.50	6.50	5.40	6.50
SUM DEVATION	-64.36	-99.22	103.13	64.07
SUM SQRD DEV	276.64	255.77	942.80	1410.47
AVG OBSATION	1.86	1.86	1.71	1.86
AVG PREDTION	1.37	1.10	2.62	2.35
VAR DEVATION	1.90	1.40	7.58	10.69
VAR PREDTION	1.14	0.46	8.15	11.65
VAR OBSRVATN	1.55	1.55	1.18	1.55
AVG D/AVG OB	-0.27	-0.41	0.53	0.26
AVG P/AVG OB	0.73	0.59	1.53	1.26
MIN D/AVG OB	-2.53	-2.53	-2.30	-2.34
MAX D/AVG OB	2.05	0.76	7.82	10.78
RNG D/RNG OB	1.31	0.94	3.21	3.76

TABLE 87

DOWNWIND ANALYSIS, ALL SITES, RECEPTOR DISTANCE .GT. 100 FEET

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	124.00	124.00	112.00	124.00
AVG DEVATION	0.06	-0.13	0.59	0.62
AVG SQRD DEV	0.40	0.31	1.67	3.41
PROBLE ERROR	0.42	0.38	0.87	1.24
% CORR COEF	0.13	0.16	0.25	-0.02
A, OB=A*P+B	0.15	0.26	0.10	-0.01
B, OB=A*P+B	0.51	0.49	0.48	0.62
MINIMUM DEV	-1.71	-1.71	-1.19	-1.60
MAXIMUM DEV	1.74	1.34	6.02	12.26
DEVATN RANGE	3.45	3.05	7.21	13.86
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	2.40	2.40	2.40	2.40
OBSATN RANGE	2.40	2.40	2.40	2.40
SUM DEVATION	7.55	-15.90	66.13	76.32
SUM SQRD DEV	49.35	38.93	187.05	422.29
AVG OBSATION	0.61	0.61	0.59	0.61
AVG PREDTION	0.67	0.48	1.18	1.23
VAR DEVATION	0.40	0.30	1.33	3.05
VAR PREDTION	0.21	0.10	1.39	2.77
VAR OBSRVATN	0.25	0.25	0.22	0.25
AVG D/AVG OB	0.10	-0.21	0.99	1.00
AVG P/AVG OB	1.10	0.79	1.99	2.00
MIN D/AVG OB	-2.79	-2.79	-2.00	-2.61
MAX D/AVG OB	2.84	2.19	10.14	20.00
RNG D/RNG OB	1.44	1.27	3.00	5.77

TABLE 88

DOWNWIND ANALYSIS, ALL SITES, RECEPTOR HEIGHT = 5 FEET

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	207.00	207.00	184.00	207.00
AVG DEVATION	-0.03	-0.27	0.84	0.73
AVG SQRD DEV	0.76	0.62	4.46	6.48
PROBLE ERROR	0.59	0.53	1.42	1.71
% CORR COEF	0.53	0.62	0.46	0.35
A, OB=A*P+B	0.59	1.00	0.18	0.13
B, OB=A*P+B	0.44	0.27	0.63	0.80
MINIMUM DEV	-3.44	-3.44	-2.03	-2.38
MAXIMUM DEV	3.81	1.41	13.38	20.05
DEVATN RANGE	7.25	4.85	15.41	22.43
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	5.40	5.40	5.40	5.40
OBSATN RANGE	5.40	5.40	5.40	5.40
SUM DEVATION	-7.02	-55.64	154.85	151.07
SUM SQRD DEV	157.84	128.34	820.88	1340.51
AVG OBSATION	1.02	1.02	0.95	1.02
AVG PREDTION	0.99	0.75	1.80	1.75
VAR DEVATION	0.77	0.55	3.77	5.97
VAR PREDTION	0.71	0.34	4.77	6.81
VAR OBSRVATN	0.90	0.90	0.71	0.90
AVG D/AVG OB	-0.03	-0.26	0.88	0.71
AVG P/AVG OB	0.97	0.74	1.88	1.71
MIN D/AVG OB	-3.36	-3.36	-2.13	-2.33
MAX D/AVG OB	3.73	1.38	14.03	19.60
RNG D/RNG OB	1.34	0.90	2.85	4.15

TABLE 89

DOWNWIND ANALYSIS, ALL SITES, RECEPTOR HEIGHT = 10 FEET

STATISTICS	VAI	VAP	CAL	EPA
[illegible]	34.00	34.00	28.00	34.00
[illegible]	-0.53	-0.81	1.37	0.60
[illegible]	2.11	2.05	8.85	11.78
[illegible]	0.97	0.96	1.99	2.30
[illegible]	0.40	0.52	0.49	0.40
[illegible]	0.52	1.19	0.16	0.15
[illegible]	1.28	0.57	1.26	1.70
[illegible]	-4.71	-4.71	-0.91	-2.45
[illegible]	2.37	1.07	10.36	16.55
[illegible]	7.08	5.78	11.27	19.00
[illegible]	0.0	0.0	0.0	0.0
[illegible]	6.50	6.50	4.20	6.50
[illegible]	6.50	6.50	4.20	6.50
[illegible]	-16.03	-27.71	38.25	20.25
[illegible]	71.70	69.73	247.86	400.40
[illegible]	2.10	2.10	1.77	2.10
[illegible]	1.57	1.29	3.14	2.70
[illegible]	1.88	1.43	7.24	11.77
[illegible]	1.10	0.37	9.24	14.00
[illegible]	1.93	1.93	1.05	1.93
[illegible]	-0.25	-0.39	0.77	0.28
[illegible]	0.75	0.61	1.77	1.28
[illegible]	-2.24	-2.24	-0.51	-1.17
[illegible]	1.13	0.51	5.84	7.87
[illegible]	1.09	0.89	2.68	2.92

TABLE 90

DOWNWIND ANALYSIS, ALL SITES, RECEPTOR HEIGHT = 45 FEET

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	13.00	13.00	13.00	13.00
AVG DEVATION	-2.44	-2.44	-1.83	-2.38
AVG SQRD DEV	7.42	7.43	4.70	7.07
PROBLE ERROR	1.82	1.83	1.45	1.78
% CORR COEF	0.39	0.36	0.38	0.40
A, OB=A*P+B	5.30	5.27	1.62	3.30
B, OB=A*P+B	1.47	1.48	1.32	1.71
MINIMUM DEV	-4.43	-4.43	-3.94	-4.36
MAXIMUM DEV	-0.62	-0.61	-0.06	-0.48
DEVATN RANGE	3.81	3.82	3.88	3.88
MINIMUM OBS	0.80	0.80	0.80	0.80
MAXIMUM OBS	4.60	4.60	4.60	4.60
OBSATN RANGE	3.80	3.80	3.80	3.80
SUM DEVATION	-31.76	-31.77	-23.84	-30.93
SUM SQRD DEV	96.45	96.64	61.11	91.85
AVG OBSATION	2.67	2.67	2.67	2.67
AVG PREDTION	0.23	0.23	0.84	0.29
VAR DEVATION	1.57	1.58	1.45	1.52
VAR PREDTION	0.01	0.01	0.09	0.02
VAR OBSRVATN	1.66	1.66	1.66	1.66
AVG D/AVG OB	-0.92	-0.92	-0.69	-0.89
AVG P/AVG OB	0.08	0.08	0.31	0.11
MIN D/AVG OB	-1.66	-1.66	-1.48	-1.63
MAX D/AVG OB	-0.23	-0.23	-0.02	-0.18
RNG D/RNG OB	1.00	1.01	1.02	1.02

TABLE 91

DOWNWIND ANALYSIS, ALL SITES, AT GRADE

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	214.00	214.00	185.00	214.00
AVG DEVATION	-0.03	-0.30	1.12	0.89
AVG SQRD DEV	0.97	0.83	5.70	8.03
PROBLE ERROR	0.66	0.61	1.60	1.90
% CORR COEF	0.54	0.66	0.50	0.37
A, OB=A*P+B	0.69	1.24	0.20	0.14
B, OB=A*P+B	0.40	0.09	0.66	0.92
MINIMUM DEV	-4.71	-4.71	-1.61	-2.45
MAXIMUM DEV	3.81	1.41	13.38	20.05
DEVATN RANGE	8.52	6.12	14.99	22.50
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	6.50	6.50	5.40	6.50
OBSATN RANGE	6.50	6.50	5.40	6.50
SUM DEVATION	-5.95	-64.70	207.76	190.72
SUM SQRD DEV	208.20	177.85	1054.18	1718.71
AVG OBSATION	1.22	1.22	1.10	1.22
AVG PREDTION	1.19	0.92	2.22	2.11
VAR DEVATION	0.98	0.74	4.46	7.27
VAR PREDTION	0.78	0.36	5.86	8.43
VAR OBSRVATN	1.27	1.27	0.90	1.27
AVG D/AVG OB	-0.02	-0.25	1.02	0.73
AVG P/AVG OB	0.98	0.75	2.02	1.73
MIN D/AVG OB	-3.86	-3.86	-1.47	-2.01
MAX D/AVG OB	3.13	1.16	12.20	16.45
RNG D/RNG OB	1.31	0.94	2.78	3.46

TABLE 92

DOWNWIND ANALYSIS, ALL SITES, ELEVATED

STATISTICS	VAI	VAP	CAL	EPA
DATA POINTS	40.00	40.00	40.00	40.00
AVG DEVATION	-1.27	-1.26	-0.96	-1.26
AVG SQRD DEV	2.94	2.92	1.89	2.85
PROBLE ERROR	1.15	1.15	0.92	1.13
% CORR COEF	0.62	0.63	0.75	0.59
A, OB=A*P+B	9.52	10.45	2.84	5.39
B, OB=A*P+B	-0.04	-0.29	0.11	0.53
MINIMUM DEV	-4.43	-4.43	-3.94	-4.36
MAXIMUM DEV	0.13	0.14	0.25	0.15
DEVATN RANGE	4.56	4.57	4.19	4.51
MINIMUM OBS	0.0	0.0	0.0	0.0
MAXIMUM OBS	4.60	4.60	4.60	4.60
OBSATN RANGE	4.60	4.60	4.60	4.60
SUM DEVATION	-50.86	-50.42	-38.50	-50.33
SUM SQRD DEV	117.79	116.85	75.67	114.05
AVG OBSATION	1.42	1.42	1.42	1.42
AVG PREDTION	0.15	0.16	0.46	0.17
VAR DEVATION	1.36	1.37	0.99	1.30
VAR PREDTION	0.01	0.01	0.10	0.02
VAR OBSRVATN	1.47	1.47	1.47	1.47
AVG D/AVG OB	-0.89	-0.88	-0.68	-0.88
AVG P/AVG OB	0.11	0.12	0.32	0.12
MIN D/AVG OB	-3.11	-3.11	-2.76	-3.06
MAX D/AVG OB	0.09	0.10	0.18	0.11
RNG D/RNG OB	0.99	0.99	0.91	0.98

AIRPORT VS. ROADSIDE WINDSPEEDS

During the validation phase of the AIRPOL study, roadside meteorological conditions were observed for later use as inputs to the prediction models. Since the observed roadside windspeeds appeared to be significantly lower than those expected based on historical airport weather data, an analysis was made comparing observed roadside windspeeds with available airport windspeeds. The data base used for this analysis is detailed in Table 93. Table 94 illustrates the results of a least-squares analysis of the data in Table 93 under the hypothesis that the roadside windspeed equals zero when the airport windspeed equals zero. Figure 6 illustrates the fit of the regression equation and the data points shown in Table 94.

TABLE 93

Airport/Roadside Windspeed Data

Site	Date	Hour	Airport Windspeed	Roadside Windspeed
1 A	6/14/73	1705 - 1805	12.0	5.6
1 B	6/15/73	0745 - 0845	3.5	1.3
1 G	11/1/73	1552 - 1652	16.0	9.0
1 H	11/2/73	0750 - 0850	8.0	0.6
2 A	7/3/73	0730 - 0830	6.9	4.2
2 B	7/3/73	1115 - 1215	12.0	6.9
3 A	7/17/73	1615 - 1715	6.3	2.9
3 B	7/18/73	0715 - 0815	4.0	1.3
3 C	7/18/73	1100 - 1200	6.3	4.6
5 A	1/30/74	1535 - 1635	8.6	1.2
5 B	1/30/74	1635 - 1735	4.6	0.6
5 C	1/31/74	0830 - 0930	13.0	5.6
5 D	1/31/74	0930 - 1030	10.0	5.0
5 E	3/6/74	1545 - 1645	12.0	2.7
5 F	3/6/74	1645 - 1745	8.6	2.3
5 G	3/7/74	0735 - 0835	3.5	1.6
5 H	3/7/74	0835 - 0935	5.8	2.0

TABLE 94

AIRPORT VERSUS ROADSIDE WINDSPEEDS

SIMREG -- 5. JULY 1974:

THE INDEPENDENT VARIABLE (X) IS

AIRPORT WINDSPEED

THE DEPENDENT VARIABLE (Y) IS

ROADSIDE WINDSPEED

NO CONSTANT TERM

Y = AX + 0.0

17 DATA POINTS

SLOPE .424120010638 2

STD OF SLOPE .413025350608E-01

SLOPE T-VALUE 10.26861934777

VARIANCE OF FIT 2.373264307690

STANDARD ERROR OF ESTIMATE 1.540540264871

INDEPENDENT	DEPENDENT	ESTIMATE	RESIDUAL	PERCENT ERROR	95 PERCENT CONFIDENCE BAND BASED ON T STATISTIC	
12.0000000000	5.60000000000	5.08944012766	.510559872341	9.1	1.91756066317	8.26131959214
3.50000000000	1.30000000000	1.48442003723	-.184420037234	-14.2	-1.54830334414	4.51714341861
16.0000000000	9.00000000000	6.78592017021	2.2140798 2979	24.6	3.50037634165	10.0714639988
8.00000000000	.600000000000	3.39296008511	-2.79296008511	-465.5	.304829795486	6.48109037473
6.90000000000	4.20000000000	2.92642807340	1.27357192660	30.3	-.144262196866	5.99711834367
12.0000000000	6.90000000000	5.08944012766	1.81055987234	26.2	1.91756066317	8.26131959214
6.30000000000	2.90000000000	2.67195606702	.228043932979	7.9	-.390271217396	5.73418335144
4.00000000000	1.30000000000	1.69648004255	-.396480042553	-30.5	-1.34029230564	4.73325239074
6.30000000000	4.60000000000	2.67195606702	1.92804393298	41.9	-.390271217396	5.73418335144
8.60000000000	1.20000000000	3.64743209149	-2.44743209149	-204.0	.548751665600	6.74611251738
4.60000000000	.600000000000	1.95095204894	-1.35095204894	-225.2	-1.09138286881	4.99328696669
13.0000000000	5.60000000000	5.51356013830	.864398617033E-01	1.5	2.31595886299	8.71116141360
10.0000000000	5.00000000000	4.24120010638	.758799893618	15.2	1.11510502164	7.36729519113
12.0000000000	2.70000000000	5.08944012766	-2.38944012766	-88.5	1.91756066317	8.26131959214
8.60000000000	2.30000000000	3.64743209149	-1.34743209149	-58.6	.548751665600	6.74611251738
3.50000000000	1.60000000000	1.48442003723	.115579962766	7.2	-1.54830334414	4.51714341861
5.80000000000	2.00000000000	2.45986606170	-.459896061702	-23.0	-.595850651199	5.51564277460

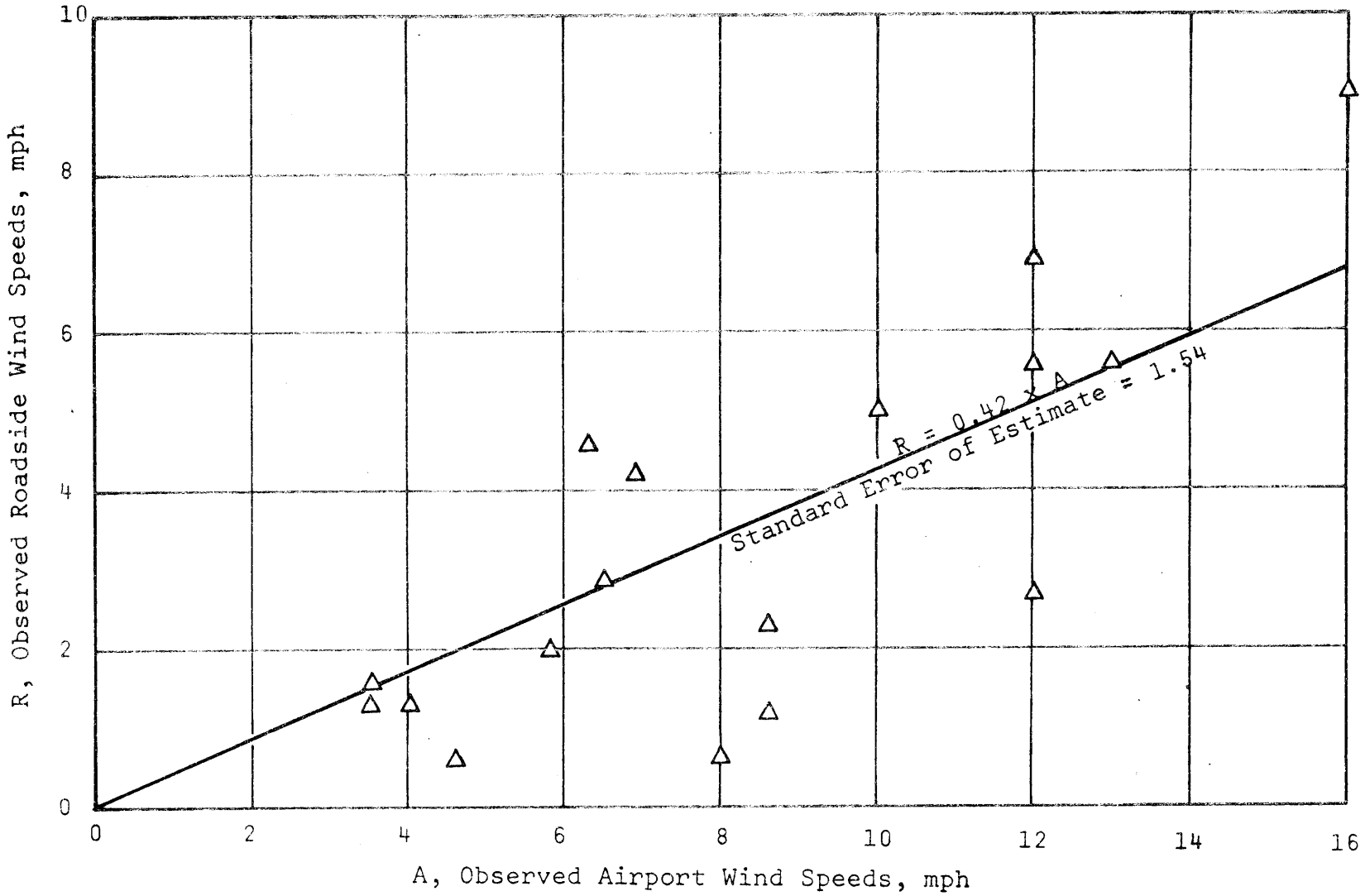

Figure 6. Relationship between roadside and airport wind speeds.

CALAIR PROGRAM LISTING

This section contains a listing of the program CALAIR and its nine associated subprograms, SAMPL1, SAMPL2, XWIND, XCON, PWIND, PCON, PWA, SIGMAY, and SIGMAZ, as compiled under an IBM FORTRAN IV, G-level compiler and implemented for the AIRPOL study on Virginia's Department of Highways and Transportation IBM 370/158 computer running under OS release MFT 21.7 with Hasp II and 1 megabyte of core.

```
FORTRAN IV G LEVEL  21                  MAIN                DATE = 75245          10/29/14

            C         MAIN CALLING PROGRAM
            C         DATA SET ENG069        AT LEVEL 001 AS OF 03/02/73
            C         PUNCH X IN CARD COLUMN 1 FOR CROSS WIND CALCULATION
            C         PUNCH P IN CARD COLUMN 2 FOR PARALLEL WIND CALCULATION
            C         PUNCH BOTH COLUMNS FOR BOTH CALCULATIONS
0001                  INTEGER MESS(18)
0002                  DATA KRD,SPC,X,P /5,' ','X','P'/
0003              100 FORMAT(2A1,8X,17A4,A2)
0004              150 FORMAT('1',10X,17A4,A2)
0005              200 FORMAT (10X,'XWIND CONTROL PARAMETER IS NOT EQUAL X')
0006              300 FORMAT (10X,'PWIND CONTROL PARAMETER IS NOT EQUAL P')
0007                1 CONTINUE
0008                  READ (KRD,100,END=10) XWND,PARWND,MESS
0009                  WRITE(6,150) MESS
0010                  IF (XWND.NE.X.AND.XWND.NE.SPC) WRITE(6,200)
0011                  IF (PARWND.NE.P.AND.PARWND.NE.SPC) WRITE(6,300)
0012                  IF (XWND.EQ.X) CALL SAMPL1
0013                  IF (PARWND.EQ.P) CALL SAMPL2
0014                  GO TO 1
0015               10 CONTINUE
0016                  STOP                                                    00003
0017                  END                                                     00004
```

```
FORTRAN IV G LEVEL  21                SAMPL1              DATE = 75245          10/29/14

0001                  SUBROUTINE SAMPL1                                                  00005
                C                                                                        00006
                C  THE FOLLOWING IS A SAMPLE PROGRAM FOR CALLING XWIND:                  00007
                C                                                                        00008
0002                  INTEGER  CLAS                                                      00009
0003                  REAL     MW                                                        00010
0004                  DATA KRD/5/
                C                                                                        00011
0005                  WRITE(6,80)                                                        00012
0006                80 FORMAT( ///' MODEL POLLUTION CONCENTRATION'                       00013
                   2          /' CALCULATION FOR CROSS WINDS'  )                       00014
0007                  READ (KRD,400) VPH,EF,U,PHI,H,Z,D,CLAS,MW
0008               400 FORMAT (F10.0,6F5.0,I2,4F9.0)
0009                  WRITE(6,90)                                                        00024
0010                90 FORMAT( /// 4X,'INPUT PARAMETERS:')                            00025
0011                  WRITE(6,100) VPH,EF,U,PHI,H,Z,D,CLAS,MW                            00026
0012               100 FORMAT(  /' VPH  =',F10.2,' VEHICLES/HR'                        00027
                   2          /' EF   =',F10.2,' GRAMS/MILE '                        00028
                   3          /' U    =',F10.2,' MILES/HR   '                        00029
                   4          /' PHI  =',F10.2,' DEGREES    '                        00030
                   5          /' H    =',F10.2,' FEET       '                        00031
                   6          /' Z    =',F10.2,' FEET       '                        00032
                   7          /' D    =',F10.2,' FEET       '                        00033
                   8          /' CLAS =',I7,3X,' (1-6 = A-F)'                        00034
                   9          /' MW   =',F10.2,' (UNITLESS) ' )                      00035
0013                  CALL XWIND(VPH,EF,U,PHI,H,Z,D,CLAS,MW,PPM,CMIX,PPMX)               00036
0014                  WRITE(6,300)                                                       00037
0015               300 FORMAT(  // 4X,'POLLUTION CONCENTRATIONS:')                      00038
0016                  WRITE(6,200) PPM,CMIX,PPMX                                         00039
0017               200 FORMAT(  /' PPM  =',F10.2,' PARTS PER MILLION AT D FEET FROM ROADW00040
                   2AY'       /' CMIX =',F10.2,' GRAMS/CUBIC METER ON ROADWAY'        00041
                   3          /' PPMX =',F10.2,' PARTS PER MILLION ON ROADWAY'  )     00042
0018                  RETURN                                                             00043
0019                  END                                                                00044
```

```
FORTRAN IV G LEVEL  21                SAMPL2              DATE = 75245          10/29/14

0001                  SUBROUTINE SAMPL2                                                  00045
                C                                                                        00046
                C  THE FOLLOWING IS A SAMPLE PROGRAM FOR CALLING PWIND:                  00047
                C                                                                        00048
0002                  INTEGER  CLAS                                                      00049
0003                  REAL     MW                                                        00050
0004                  DATA KRD/5/
                C                                                                        00051
0005                  WRITE(6,80)                                                        00052
0006               80 FORMAT( ///' MODEL POLLUTION CONCENTRATION'                        00053
                  2           /' CALCULATION FOR PARALLEL WINDS' )                     00054
0007                  READ (KRD,400) VPH,EF,U,PHI,H,Z,D,CLAS,MW,DWD,W,WDTH
0008              400 FORMAT (F10.0,6F5.0,I2,4F9.0)
0009                  WRITE(6,90)                                                        00067
0010               90 FORMAT( /// 4X,'INPUT PARAMETERS:')                              00068
0011                  WRITE(6,100) VPH,EF,U,PHI,H,Z,D,CLAS,MW                            00069
0012              100 FORMAT(  /' VPH  =',F10.2,' VEHICLES/HR'                         00070
                  2           /' EF   =',F10.2,' GRAMS/MILE '                          00071
                  3           /' U    =',F10.2,' MILES/HR   '                          00072
                  4           /' PHI  =',F10.2,' DEGREES    '                          00073
                  5           /' H    =',F10.2,' FEET       '                          00074
                  6           /' Z    =',F10.2,' FEET       '                          00075
                  7           /' D    =',F10.2,' FEET       '                          00076
                  8           /' CLAS =',I7,3X,' (1-6 = A-F)'                          00077
                  9           /' MW   =',F10.2,' (UNITLESS) ' )                        00078
0013                  WRITE(6,101) DWD,W,WDTH                                        00079
0014              101 FORMAT(    ' DWD  =',F10.2,' FEET       '                       00080
                  2           /' W    =',F10.2,' FEET       '                       00081
                  3           /' WDTH =',F10.2,' FEET       ' )                     00082
0015                  CALL PWIND(VPH,EF,U,PHI,H,Z,D,CLAS,MW,DWD,W,WDTH,              00083
                  2            PPM,CMIX,PPMX)                                        00084
0016                  WRITE(6,300)                                                   00085
0017              300 FORMAT(  // 4X,'POLLUTION CONCENTRATIONS:')                    00086
0018                  WRITE(6,200) PPM,CMIX,PPMX                                     00087
0019              200 FORMAT(  /' PPM  =',F10.2,' PARTS PER MILLION AT D FEET FROM ROADW00088
                  2AY'        /' CMIX =',F10.2,' GRAMS/CUBIC METER ON ROADWAY'       00089
                  3           /' PPMX =',F10.2,' PARTS PER MILLION ON ROADWAY'  )     00090
0020                  RETURN                                                         00091
0021                  END                                                            00092
```

```
FORTRAN IV G LEVEL  21                    XWIND                DATE = 75245          10/29/14

0001                  SUBROUTINE    XWIND  (VPH,EF,U,PHI,H,Z,D,CLAS,MW,                00093
                     2                       PPM,CMIX,PPMX)                            00094
                C                                                                      00095
                C     WRITTEN BY WALT WINTER - AUG 1972                                00096
                C                                                                      00097
                C     TRANSLATED FROM TENET BASIC TO FORTRAN                           00098
                C     BY MIKE FITZPATRICK - JAN 1973 - FLORIDA DEPARTMENT OF           00099
                C     TRANSPORTATION. PHONE: 904-488-2342.                             00100
                C                                                                      00101
                C      TRANSLATOR'S NOTES:                                             00102
                C           THE TRANSLATION HAS BEEN MADE AS LITERAL AS                00103
                C        POSSSIBLE SO THAT THE USER CAN MOST EASILY                    00104
                C        INCORPORATE INTO THE FORTRAN VERSION FUTURE                   00105
                C        UPDATES OF THE TENET BASIC VERSION.                           00106
                C           AS WRITTEN THIS SUBROUTINE WILL RUN UNDER                  00107
                C        AN AMERICAN NATIONAL STANDARD FULL FORTRAN IV                 00108
                C        COMPILER. BECAUSE OF STATEMENTS OF THE FORM                   00109
                C        OF 2150, XWIND MUST BE REWRITTEN TO RUN UNDER                 00110
                C        BASIC FORTRAN IV.                                             00111
                C                                                                      00112
                C     ADDRESS COMMENTS OR QUESTIONS ON THE TRANSLATION TO              00113
                C           ENVIRONMENTAL PLANNING: ATTN JAKE KRAFT                    00114
                C           FLORIDA DEPARTMENT OF TRANSPORTATION                       00115
                C           HAYDON BURNS BUILDING                                      00116
                C           TALLAHASSEE, FLORIDA 32304                                 00117
                C                                                                      00118
                C  THE SUBROUTINE XWIND FIRST CHECKS THE INPUT DATA. IF THAT DATA IS    00119
                C  UNSUITABLE AN APPROPRIATE ERROR MESSAGE IS PRINTED AND EXECUTION     00120
                C  IS TERMINATED. IF THE DATA IS SUITABLE THE POLLUTANT CONCENTRATION   00121
                C  IS CALCULATED AND RETURNED BOTH FOR THE MIXING CELL AND AWAY FROM    00122
                C  THE ROADWAY. XWIND CALLS XCON AT 2540.                              00123
0002                  INTEGER  CLAS                                                    00124
0003                  REAL     MW,K1,K2,K3,K4,K                                        00125
                C                                                                      00126
                C                                                                      00127
                C                                                                      00128
                C  INPUT PARAMETERS:                                                   00129
                C     VPH  = VEHICLES/HR                                               00130
                C     EF   = EMISSION FACTOR (GMS/MILE)                                00131
                C     U    = WIND SPEED (MPH)                                          00132
                C     PHI  = WIND ANGLE (DEGREES)                                      00133
                C     H    = PAVEMENT HEIGHT (FT)                                      00134
                C     Z    = RECEPTOR HEIGHT (FT)                                      00135
                C     D    = DISTANCE FROM EDGE OF SHOULDER TO RECEPTOR (FT)           00136
                C     CLAS = STABILITY CLASS (1-6 = A-F)                               00137
                C     MW   = MOLECULAR WEIGHT OF POLLUTANT                             00138
                C                                                                      00139
                C  OUTPUT PARAMETERS:                                                  00140
                C     PPM  = PARTS PER MILLION OF POLLUTANT                            00141
                C     CMIX = MIXING CELL CONCENTRATION IN GMS/M**3                     00142
                C     PPMX = MIXING CELL CONCENTRATION IN PPM                          00143
                C                                                                      00144
                C  EMPIRICAL FACTORS:                                                  00145
                C                                                                      00146
                C   FACTOR ON HIGHWAY                                                 00147
0004                  K1 = 4.24                                                        00148
                C   ELEVATED                                                          00149
0005                  K2 = 4.24                                                        00150
```

```
                C   AT GRADE                                                          00151
0006                  K3 = 4.24                                                     00152
                C   CUT                                                           00153
0007                  K4 = 4.24                                                     00154
                C                                                                   00155
                C  OTHER VARIABLES:  HMET,ZMET,Q,UBAR,PHIR,EXPT,X,C,K               00156
                C                                                                   00157
                C                                                                   00158
                C  THE FOLLOWING SECTION CHECKS FOR                                 00159
                C     INVALID CASES.                                                00160
                C                                                                   00161
0006             2150 IF (PHI .GE. 12.5) GO TO 2190                                 00162
0009             2170 WRITE(6,2171)                                                 00163
0010             2171 FORMAT(// 10X, 'USE PARALLEL WIND MODEL.' )                   00164
0011             2180 STOP                                                          00165
0012             2190 IF (U .GE. 2.) GO TO 2220                                     00166
0013             2200 WRITE(6,2201)                                                 00167
0014             2201 FORMAT(// 10X, 'MODEL NOT VALID FOR WIND SPEEDS LESS THAN 2 MPH.')00168
0015             2210 STOP                                                          00169
0016             2220 IF (D .EQ. 0.) GO TO 2260                                     00170
0017             2230 IF (Z .GE. 0.) GO TO 2260                                     00171
0018             2240 WRITE(6,2241)                                                 00172
0019             2241 FORMAT(// 10X, 'MODEL NOT VALID FOR DEPRESSED RECEPTORS.' )   00173
0020             2250 STOP                                                          00174
0021             2260 IF (H .LT. -30.) GO TO 2340                                   00175
0022             2270 IF (D .GT. 0.) GO TO 2360                                     00176
0023             2280 IF (D .LT. 0.) GO TO 2320                                     00177
                C  NOTE THAT D MUST BE ZERO TO GET TO 2290.                         00178
0024             2290 IF ((Z-H) .LE. 12.) GO TO 2460                                00179
0025             2300 WRITE(6,2301)                                                 00180
0026             2301 FORMAT(// 10X, 'MODEL NOT VALID DIRECTLY ABOVE MIXING CELL.' ) 00181
0027             2310 STOP                                                          00182
0028             2320 WRITE(6,2321)                                                 00183
0029             2321 FORMAT(// 10X, 'MODEL NOT VALID FOR UPWIND CONDITIONS.' )     00184
0030             2330 STOP                                                          00185
0031             2340 WRITE(6,2341)                                                 00186
0032             2341 FORMAT(// 10X, 'MODEL NOT VALID FOR DEEP CUT SECTIONS.' )     00187
0033             2350 STOP                                                          00188
0034             2360 IF (H .GT. -10.) GO TO 2460                                   00189
0035             2370 IF (CLAS .LT. 5) DMIN = 100.                                  00190
0036             2380 IF (CLAS .EQ. 5 .AND. H .GE. -20.) DMIN = 100.                00191
0037             2390 IF (CLAS .EQ. 5 .AND. H .LT. -20.) DMIN = 200.                00192
0038             2400 IF (CLAS .EQ. 6 .AND. H .GE. -25.) DMIN = 100.                00193
0039             2410 IF (CLAS .EQ. 6 .AND. H .LT. -25.) DMIN = 200.                00194
0040             2420 IF (D .GE. DMIN) GO TO 2460                                   00195
0041             2430 WRITE(6,2431)                                                 00196
0042             2431 FORMAT(// 10X, 'MODEL NOT VALID THIS CLOSE TO FWY FOR CUT SECTIONS00197
                     2.' )                                                         00198
0043             2440 STOP                                                          00199
                C                                                                   00200
                C  THE FOLLOWING SECTION PERFORMS                                   00201
                C  THE CALCULATIONS.                                                00202
                C                                                                   00203
0044             2460 HMET = H/3.28                                                 00204
0045             2470 ZMET = Z/3.28                                                 00205
0046             2480 Q    = 1.73E-7*VPH*EF                                         00206
0047             2490 UBAR = U/2.23                                                 00207
0048             2500 PHIR = PHI/57.295                                             00208
```

```
FORTRAN IV G LEVEL  21                    XWIND                    DATE = 75245          10/29/14

0049          2510 CMIX = (1.06*Q)/(K1*UBAR*SIN(PHIR))                                    00209
0050          2520 PPMX = CMIX*.0245E6/MW                                                 00210
0051          2530 X    = D/3281.                                                         00211
             C                                                                            00212
0052          2540 CALL XCON(Z,ZMET,H,K1,K2,K3,K4,HMET,UBAR,PHIR,CLAS,X,Q,C)              00213
             C                                                                            00214
0053          2550 IF(D .EQ. 0.) C=CMIX                                                   00215
0054          2560 PPM = C*.0245E6/MW                                                     00216
0055          2570 RETURN                                                                 00217
0056               END                                                                    00218
```

```
FORTRAN IV G LEVEL  21                    XCON                DATE = 75245          10/29/14

0001                  SUBROUTINE   XCON(Z,ZMET,H,K1,K2,K3,K4,HMET,UBAR,PHIR,CLAS,X,Q,C) 00219
                C                                                                       00220
                C  THE SUBROUTINE XCON CALCULATES THE POLLUTANT CONCENTRATION (GMS/M**3)00221
                C  XCON IS CALLED BY XWIND AT 2540.                                     00222
                C  XCON CALLS SIGMAZ AT 2590.                                           00223
                C                                                                       002 4
0002                  INTEGER  CLAS                                                     00225
0003                  REAL     K1,K2,K3,K4,K                                            00226
                C                                                                       00227
                C  INPUT PARAMETERS:                                                    00228
                C     Z    = RECEPTOR HEIGHT (FT)                                       00229
                C     ZMET = RECEPTOR HEIGHT (METERS)                                   00230
                C     H    = PAVEMENT HEIGHT (FT)                                       00231
                C     K1   = EMPIRICAL FACTOR ON HIGHWAY                                00232
                C     K2   = EMPIRICAL FACTOR ELEVATED                                  00233
                C     K3   = EMPIRICAL FACTOR AT GRADE                                  00234
                C     K4   = EMPIRICAL FACTOR CUT                                       00235
                C     HMET = PAVEMENT HEIGHT (METERS)                                   00236
                C     UBAR = WINDSPEED (METERS/S)                                       00237
                C     PHIR = WIND ANGLE (RADIANS)                                       00238
                C     CLAS = STABILITY CLASS (1-6 = A-F)                                00239
                C     X    = DISTANCE FROM EDGE OF SHOULDER TO RECEPTOR (KMS)            00240
                C     Q    = EMISSION SOURCE STRENGTH                                   00241
                C                                                                       00242
                C  OUTPUT PARAMETERS:                                                   00243
                C     C    = CONCENTRATION OF POLLUTANT (GMS/M**3)                      00244
                C                                                                       00245
0004             2590 CALL SIGMAZ(CLAS,X,SIGZ)                                          00246
0005             2600 IF (Z .LE. 5.) ZMET = 0.                                          00247
                C                                                                       00248
                C  ELEVATED SECTION:                                                    00249
0006             2610 IF (H .GE. 10.) GO TO 2680                                        00250
                C                                                                       00251
                C  CUT SECTION:                                                         00252
0007             2620 IF (H .LE. -10.) GO TO 2750                                       00253
                C                                                                       00254
                C  EXPONENTIAL TERM FOR AT GRADE:                                       00255
0008             2640 K = K3                                                            00256
0009             2650 EXPT = EXP(-((ZMET/SIGZ)**2)/2.)                                  00257
0010             2660 GO TO 2770                                                        00258
                C                                                                       00259
                C  EXPONENTIAL TERM FOR ELEVATED:                                       00260
0011             2680 K = K2                                                            00261
0012             2690 IF (ZMET .EQ. 0.) GO TO 2720                                      00262
0013             2700 EXPT = EXP(((ZMET+HMET)/SIGZ)**2/(-2.))                           00263
                    2     +EXP(((ZMET-HMET)/SIGZ)**2/(-2.))                           00264
0014             2710 GO TO 2770                                                        00265
0015             2720 EXPT = EXP(-((HMET/SIGZ)**2)/2.)                                  00266
0016             2730 GO TO 2770                                                        00267
                C                                                                       00268
                C  EXPONENTIAL TERM FOR CUT                                             00269
0017             2750 K = K4                                                            00270
0018             2760 EXPT = EXP((HMET/SIGZ)**2/2.)*EXP(-((ZMET/SIGZ)**2)/2.)          00271
                C                                                                       00272
0019             2770 C = 4.24*Q*EXPT/(K*SIGZ*UBAR*SIN(PHIR))                           00273
0020             2780 RETURN                                                            00274
0021                  END                                                               00275
```

```
FORTRAN IV G LEVEL  21                    PWIND                DATE = 75245          10/29/14

0001                  SUBROUTINE    PWIND  (VPH,EF,U,PHI,H,Z,D,CLAS,MW,DWD,W,WDTH,      00276
                     2                          PPM,CMIX,PPMX)                          00277
                C                                                                       00278
                C     WRITTEN BY WALT WINTER - AUG 1972                                 00279
                C                                                                       00280
                C     TRANSLATED FROM TENET BASIC TO FORTRAN                            00281
                C     BY MIKE FITZPATRICK - JAN 1973 - FLORIDA DEPARTMENT OF            00282
                C     TRANSPORTATION. PHONE: 904-488-2342.                              00283
                C                                                                       00284
                C      TRANSLATOR'S NOTES:                                              00285
                C           THE TRANSLATION HAS BEEN MADE AS LITERAL AS                 00286
                C        POSSSIBLE SO THAT THE USER CAN MOST EASILY                     00287
                C        INCORPORATE INTO THE FORTRAN VERSION FUTURE                    00288
                C        UPDATES OF THE TENET BASIC VERSION.                            00289
                C           AS WRITTEN THIS SUBROUTINE WILL RUN UNDER                   00290
                C        AN AMERICAN NATIONAL STANDARD FULL FORTRAN IV                  00291
                C        COMPILER. BECAUSE OF STATEMENTS OF THE FORM                    00292
                C        OF 2150 AND STATEMENTS OF THE FORM OF 2945                     00293
                C        AND 3130 (IN SUBROUTINE PWA), XWIND MUST                       00294
                C        BE REWRITTEN TO RUN UNDER BASIC FORTRAN IV.                    00295
                C                                                                       00296
                C     ADDRESS COMMENTS OR QUESTIONS ON THE TRANSLATION TO               00297
                C           ENVIRONMENTAL PLANNING: ATTN JAKE KRAFT                     00298
                C           FLORIDA DEPARTMENT OF TRANSPORTATION                        00299
                C           HAYDON BURNS BUILDING                                       00300
                C           TALLAHASSEE, FLORIDA 32304                                  00301
                C                                                                       00302
                C  THE SUBROUTINE PWIND FIRST CHECKS THE INPUT DATA. IF THAT DATA IS    00303
                C  UNSUITABLE AN APPROPRIATE ERROR MESSAGE IS PRINTED AND EXECUTION     00304
                C  IS TERMINATED. IF THE DATA IS SUITABLE THE POLLUTANT CONCENTRATION   00305
                C  IS CALCULATED AND RETURNED BOTH FOR THE MIXING CELL AND AWAY FROM    00306
                C  THE ROADWAY. PWIND CALLS PWA AT 2390 AND 2450 AND PCON AT 2550.      00307
0002                     INTEGER  CLAS                                                  00308
0003                     REAL     MW,K1,K2,K3,K4,K                                      00309
                C                                                                       00310
                C                                                                       00311
                C                                                                       00312
                C  INPUT PARAMETERS:                                                    00313
                C     VPH   = VEHICLES/HR                                               00314
                C     EF    = EMISSION FACTOR (GMS/MILE)                                00315
                C     U     = WIND SPEED (MPH)                                          00316
                C     PHI   = WIND ANGLE (DEGREES)                                      00317
                C     H     = PAVEMENT HEIGHT (FT)                                      00318
                C     Z     = RECEPTOR HEIGHT (FT)                                      00319
                C     D     = DISTANCE FROM EDGE OF SHOULDER TO RECEPTOR (FT)           00320
                C     CLAS  = STABILITY CLASS (1-6 = A-F)                               00321
                C     MW    = MOLECULAR WEIGHT OF POLLUTANT                             00322
                C     DWD   = DOWNWIND DISTANCE FROM POINT WHERE WIND                   00323
                C               INITIALLY BECOMES PARALLEL TO HIGHWAY (FT)              00324
                C     W     = WIDTH OF HIGHWAY, SHOULDER-TO-SHOULDER (FT)               00325
                C     WDTH  = AVERAGE WIDTH OF CUT (AVERAGE OF TOP WIDTH                00326
                C               AND BOTTOM WIDTH) (FT)                                  00327
                C                                                                       00328
                C  OUTPUT PARAMETERS:                                                   00329
                C     PPM   = PARTS PER MILLION OF POLLUTANT                            00330
                C     CMIX  = MIXING CELL CONCENTRATION IN GMS/M**3                     00331
                C     PPMX  = MIXING CELL CONCENTRATION IN PPM                          00332
                C                                                                       00333
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                C  EMPIRICAL FACTORS:                                                  00334
                C                                                                      00335
                C   FACTOR ON HIGHWAY                                                 00336
0004                  K1 = 4.24                                                        00337
                C   ELEVATED                                                         00338
0005                  K2 = 4.24                                                        00339
                C   AT GRADE                                                         00340
0006                  K3 = 4.24                                                        00341
                C   CUT                                                              00342
0007                  K4 = 4.24                                                        00343
                C                                                                      00344
                C  OTHER VARIABLES:  HMET,ZMET,WMET,YMET,IWID,WIDE,Q,UBAR,EXPT,X,C.    00345
                C                    K,SIGZ,SIGY,A,A1                                  00346
                C                                                                      00347
                C                                                                      00348
                C  THE FOLLOWING SECTION CHECKS FOR                                    00349
                C     INVALID CASES.                                                   00350
                C                                                                      00351
0008             2160 IF(PHI .LT. 12.5) GO TO 2190                                     00352
0009             2170 WRITE(6,2171)                                                    00353
0010             2171 FORMAT(// 10X, 'USE CROSS WIND MODEL.' )                         00354
0011             2180 STOP                                                             00355
0012             2190 IF(D .EQ. 0.) GO TO 2230                                         00356
0013             2200 IF(Z .GE. 0.) GO TO 2230                                         00357
0014             2210 WRITE(6,2211)                                                    00358
0015             2211 FORMAT(// 10X, 'MODEL NOT VALID FOR DEPRESSED RECEPTORS.' )      00359
0016             2220 STOP                                                             00360
0017             2230 IF(U .GE. 2.) GO TO 2238                                         00361
0018             2232 WRITE(6,2231)                                                    00362
0019             2231 FORMAT(// 10X, 'MODEL NOT VALID FOR WIND SPEEDS LESS THAN 2 MPH.')00363
0020             2236 STOP                                                             00364
0021             2238 IF(H .LT. -30.) GO TO 2310                                       00365
0022             2240 IF(D .GT.   0.) GO TO 2330                                       00366
0023             2250 IF(D .LT.   0.) GO TO 2290                                       00367
                C  NOTE THAT D MUST BE ZERO TO GET TO 2260.                            00368
0024             2260 IF(Z-H .LE.12.) GO TO 2360                                       00369
0025             2270 WRITE(6,2271)                                                    00370
0026             2271 FORMAT(// 10X, 'MODEL NOT VALID DIRECTLY ABOVE MIXING CELL.' )   00371
0027             2280 STOP                                                             00372
0028             2290 WRITE(6,2291)                                                    00373
0029             2291 FORMAT(// 10X, 'MODEL NOT VALID FOR UPWIND CONDITIONS.' )        00374
0030             2300 STOP                                                             00375
0031             2310 WRITE(6,2311)                                                    00376
0032             2311 FORMAT(// 10X, 'MODEL NOT VALID FOR DEEP CUT SECTIONS.' )        00377
0033             2320 STOP                                                             00378
0034             2330 IF(H .LT. 0. .AND. D .LT. 100.) GO TO 2340                       00379
0035             2332 GO TO 2360                                                       00380
0036             2340 WRITE(6,2341)                                                    00381
0037             2341 FORMAT(// 10X, 'MODEL NOT VALID WITHIN 100 FEET OF SHOULDER IN CUT00382
                    2S.' )                                                             00383
0038             2350 STOP                                                             00384
                C                                                                      00385
                C  THE FOLLOWING SECTION DETERMINES                                    00386
                C     THE FACTOR A.                                                    00387
                C                                                                      00388
0039             2360 CONTINUE                                                         00389
0040             2370 WIDE = WDTH                                                      00390
0041             2380 IF(H .GE. .0) WIDE = 700.                                        00391
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      C  (USE OPEN CUT FOR AT GRADE AND ELEVATED.)                          00392
0042   2390 CALL PWA(WIDE,CLAS,DWD,A)                                       00393
0043   2400 IF(H .EQ. -30.) GO TO 2470                                       00394
0044   2410 IF(H .GE.   0.) GO TO 2470                                       00395
      C                                                                     00396
      C  **INTERPOLATION DONE BY 2430-2460.**                               00397
0045   2430 A1=A                                                            00398
0046   2440 WIDE=700.                                                       00399
0047   2450 CALL PWA(WIDE,CLAS,DWD,A)                                       00400
0048   2460 A = A + (A1-A)*H/(-30.)                                         00401
      C                                                                     00402
      C  THE FOLLOWING SECTION PERFORMS                                     00403
      C  THE CALCULATIONS.                                                  00404
      C                                                                     00405
0049   2470 CONTINUE                                                        00406
0050   2480 HMET = H/3.28                                                   00407
0051   2490 ZMET = Z/3.28                                                   00408
0052   2500 WMET = W/3.28                                                   00409
0053   2510 YMET = D/3.28                                                   00410
0054   2520 UBAR = U/2.23                                                   00411
0055   2530 Q    = (5.26E-6)*VPH*FF                                         00412
0056   2540 X    = D/3281.                                                  00413
      C                                                                     00414
0057   2550 CALL PCON(Z,ZMET,H,K1,K2,K3,K4,HMET,UBAR,YMET,WMET,CLAS,X,Q,    00415
     2          DWD,W,WIDE,A,C,CMIX)                                       00416
      C                                                                     00417
0058   2570 IF(D .EQ. 0.) C=CMIX                                            00418
0059   2580 PPM = C*.0245E6/MW                                              00419
0060   2590 PPMX = CMIX*.0245E6/MW                                          00420
0061   2600 RETURN                                                          00421
0062        END                                                             00422
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0001            SUBROUTINE   PCON(Z,ZMET,H,K1,K2,K3,K4,HMET,UBAR,YMET,WMET,CLAS,  00423
               2                    X,Q,DWD,W,WIDE,A,C,CMIX)                      00424
                C                                                                 00425
                C  THE SUBROUTINE PCON CALCULATES THE POLLUTANT CONCENTRATION (GMS/M**3)00426
                C  PCON IS CALLED BY PWIND AT 2550.                               00427
                C  PCON CALLS SIGMAZ AT 2620 AND SIGMAY AT 2625.                  00428
                C                                                                 00429
0002            INTEGER  CLAS                                                     00430
0003            REAL     K1,K2,K3,K4,K                                            00431
                C                                                                 00432
                C  INPUT PARAMETERS:                                              00433
                C     Z    = RECEPTOR HEIGHT (FT)                                 00434
                C     ZMET = RECEPTOR HEIGHT (METERS)                             00435
                C     H    = PAVEMENT HEIGHT (FT)                                 00436
                C     K1   = EMPIRICAL FACTOR ON HIGHWAY                          00437
                C     K2   = EMPIRICAL FACTOR ELEVATED                            00438
                C     K3   = EMPIRICAL FACTOR AT GRADE                            00439
                C     K4   = EMPIRICAL FACTOR CUT                                 00440
                C     HMET = PAVEMENT HEIGHT (METERS)                             00441
                C     UBAR = WINDSPEED (METERS/S)                                 00442
                C     YMET = DISTANCE FROM EDGE OF SHOULDER TO RECEPTOR (METERS)  00443
                C     WMET = WIDTH OF HIGHWAY, SHOULDER-TO-SHOULDER (METERS)      00444
                C     CLAS = STABILITY CLASS (1-6 = A-F)                          00445
                C     X    = DISTANCE FROM EDGE OF SHOULDE- TO RECEPTO- (KMS)     00446
                C     Q    = EMISSION SOURCE STRENGTH                             00447
                C     DWD  = DOWNWIND DISTANCE FROM POINT WHERE WIND              00448
                C              INITIALLY BECOMES PARALLEL TO HIGHWAY (FT)         00449
                C     W    = WIDTH OF HIGHWAY, SHOULDER-TO-SHOULDER (FT)          00450
                C     WIDE = WIDTH PARAMETER (FT)                                 00451
                C                                                                 00452
                C  OUTPUT PARAMETERS:                                             00453
                C     C    = CONCENTRATION OF POLLUTANT (GMS/M**3)                00454
                C                                                                 00455
                C                                                                 00456
0004             2620 CALL SIGMAZ(CLAS,X,SIGZ)                                    00457
0005             2625 CALL SIGMAY(CLAS,X,SIGY)                                    00458
0006             2640 IF(Z .LE. 5.) ZMET=0.                                       00459
                C                                                                 00460
                C  ELEVATED SECTION:                                              004 1
0007             2650 IF(H .GT. 0.) GO TO 2720                                    00462
                C                                                                 00463
                C  CUT SECTION:                                                   00464
0008             2660 IF(H .LT. 0.) GO TO 2790                                    004 5
                C                                                                 00466
                C  EXPONENTIAL TERM FOR AT GRADE:                                 004 7
0009             2680 K = K3                                                      00468
0010             2690 EXPT = EXP(-((YMET/SIGY)**2)/2.)*EXP(-((ZMET/SIGZ)**2)/2.)  00469
0011             2700 GO TO 2810                                                  00470
                C                                                                 00471
                C  EXPONENTIAL TERM FOR ELEVATED:                                 00472
0012             2720 K = K2                                                      00473
0013             2730 IF(ZMET .EQ. 0) GO TO 2760                                  004 4
0014             2740 EXPT = (EXP(-((YMET/SIGY)**2)/2.))                          00475
                     2       *(EXP(-(((ZMET+HMET)/SIGZ)**2)/2.)                  00476
                     3         +EXP(-(((ZMET-HMET)/SIGZ)**2)/2.))                00477
0015             2750 GO TO 2810                                                  00478
0016             2760 EXPT = EXP(-((YMET/SIGY)**2)/2.)                            00479
                     2       *EXP(-((HMET/SIGZ)**2)/2.)                          00480
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0017          2770 GO TO 2810                                                  00481
             C                                                                 00482
             C  EXPONENTIAL TERM FOR CUT                                       00483
0018          2790 K = K4                                                      00484
0019          2800 EXPT = EXP(-((YMET/SIGY)**2)/2.)                            004 5
                  2       *EXP(+((HMET/SIGZ)**2)/2.)                         00486
                  3       *EXP(-((ZMET/SIGZ)**2)/2.)                         00487
             C                                                                 00488
0020          2810 IF(W .LT. 100.) GO TO 2840                                  00489
0021          2820 C = 30.5*A*Q*EXPT/(K*UBAR*WMET)                             00490
0022          2825 CMIX = 30.5*A*Q/(K1*UBAR*WMET)                              004 1
0023          2830 RETURN                                                      004 2
0024          2840 C = WMET*A*Q*EXPT/(K*UBAR*30.5)                             004 3
0025          2845 CMIX = WMET*A*Q/(K1*UBAR*30.5)                              00494
0026          2850 RETURN                                                      00495
0027               END                                                         00496
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0001                SUBROUTINE    PWA(WIDE,CLAS,DWD,A)                                  00497
                  C                                                                     00498
0002                INTEGER  CLAS                                                       00499
0003                REAL     LNW,LNW1                                                   00500
                  C                                                                     00501
                  C  THE SUBROUTINE PWA CALCULATES THE POLLUTANT CONCENTRATION RATIO     00502
                  C  PWA IS CALLED BY PCON AT 2630.                                     00503
                  C  PWA CALLS NO SUBROUTINES.                                          00504
                  C                                                                     00505
                  C  INPUT PARAMETERS:                                                  00506
                  C     WIDE = WIDTH PARAMETER (FT)                                     00507
                  C     CLAS = STABILITY CLASS (1-6 = A-F)                              00508
                  C     DWD  = DISTANCE DOWNWIND FROM FIRST PARALLEL POINT (FT)         00509
                  C                                                                     00510
                  C  OUTPUT PARAMETERS:                                                 00511
                  C     A    = CONCENTRATION RATIO                                      00512
                  C                                                                     00513
                  C  OTHER VARIABLES:  LNW,LNW1,IWID,A1,SIGY,SIGZ                       00514
                  C                                                                     00515
                  C  ***PROGRAM CONTROL AND INTERPOLATION CALCULATION***                00516
                  C                                                                     00517
0004               2940 IF(WIDE .GT. 200.) GO TO 2970                                   00518
                  C  (IF WIDE .LE. 200. USE 200 CUT CURVE.)                             00519
0005               2945 ASSIGN 2960 TO IBR                                              00520
0006               2950 GO TO (3370,3520,3880,4340,4510,4920), CLAS                     00521
0007               2960 GO TO 5080                                                      00522
                  C                                                                     00523
0008               2970 IF(WIDE .LT. 700.) GO TO 3000                                   00524
                  C  (IF WIDE .GE. 700. USE OPEN CUT CURVES.)                           00525
0009               2975 ASSIGN 2990 TO IBR                                              00526
0010               2980 GO TO (3100,3450,3740,4030,4430,4760), CLAS                     00527
0011               2990 GO TO 5080                                                      00528
                  C                                                                     00529
                  C  INTERPOLATE BETWEEN CURVES.                                        00530
0012               3000 IWID = WIDE/100.                                                00531
                  C  FIND NARROWER CURVE VALUE:                                         00532
0013               3005 ASSIGN 3020 TO IBR                                              00533
0014               3010 GO TO (5110,5120,5130,5140,5160,5160), CLAS                     00534
0015               3020 LNW1 = LNW                                                      00535
0016               3030 A1 = A                                                          00536
                  C  FIND WIDER CURVE VALUE:                                            00537
0017               3035 ASSIGN 3050 TO IBR                                              00538
0018               3040 GO TO (5180,5190,5200,5210,5220,5230), CLAS                     00539
                  C  INTERPOLATE:                                                       00540
0019               3050 A = A1+(A-A1)/(LNW-LNW1)*(ALOG(WIDE)-LNW1)                      00541
0020               3060 GO TO 5080                                                      00542
                  C                                                                     00543
                  C                                                                     00544
                  C  ***CURVES***                                                       00545
                  C                                                                     00546
                  C  CUT SECTIONS--STABILITY A (CLAS=1)                                 00547
                  C    OPEN CUT                                                         00548
0021               3100 IF(DWD .LT. 1000.) A = .000019*DWD-.999                         00549
0022               3110 IF(DWD .GE. 1000.) A = -.98                                     00550
0023               3120 LNW = 6.55108                                                   00551
0024               3130 GO TO IBR, (2960,2990,3020,3050)                                00552
                  C    600 CUT                                                          00553
0025               3150 IF(DWD .LT. 1000.) A = .000027*DWD-.998                         00554
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0026          3160 IF(DWD .GE. 1000.) A = .000002*DWD-.973                                    00555
0027          3170 LNW = 6.39693                                                              00556
0028          3180 GO TO IBR, (2960,2990,3020,3050)                                           00557
             C     500 CUT                                                                    00558
0029          3190 CONTINUE                                                                   00559
0030          3200 IF(DWD .LT. 1000.) A = .0000333*DWD-1.0003                                 00560
0031          3210 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .00002*DWD-.987                00561
0032          3220 IF(DWD .GE. 2000.) A = -.947                                               00562
0033          3230 LNW = 6.21461                                                              00563
0034          3240 GO TO IBR, (2960,2990,3020,3050)                                           00564
             C     400 CUT                                                                    00565
0035          3250 CONTINUE                                                                   00566
0036          3260 IF(DWD .LT. 1000.) A = .0000333*DWD-.992                                   00567
0037          3270 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .00002*DWD-.979                00568
0038          3280 IF(DWD .GE. 2000.) A = -.939                                               00569
0039          3290 LNW = 5.99146                                                              00570
0040          3300 GO TO IBR, (2960,2990,3020,3050)                                           00571
             C     300 CUT                                                                    00572
0041          3310 CONTINUE                                                                   00573
0042          3320 IF(DWD .LT. 1000.) A = .0000467*DWD-.986                                   00574
0043          3330 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000032*DWD-.971               00575
0044          3340 IF(DWD .GE. 2000.) A = -.907                                               00576
0045          3350 LNW = 5.70378                                                              00577
0046          3360 GO TO IBR, (2960,2990,3020,3050)                                           00578
             C     200 CUT                                                                    00579
0047          3370 CONTINUE                                                                   00580
0048          3380 IF(DWD .LT. 1000.) A = .0000883*DWD-.974                                   00581
0049          3390 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000032*DWD-.918               00582
0050          3400 IF(DWD .GE. 2000.) A = -.854                                               00583
0051          3410 LNW = 5.29832                                                              00584
0052          3420 GO TO IBR, (2960,2990,3020,3050)                                           00585
             C                                                                                00586
             C  CUT SECTIONS--STABILITY B (CLAS=2)                                           00587
             C     OPEN CUT                                                                   00588
0053          3450 IF(DWD .LT. 1000.) A = .000048*DWD-.999                                    00589
0054          3460 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000023 *DWD-.974              00590
0055          3470 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .0000035*DWD-.935              00591
0056          3480 IF(DWD .GE. 4000.) A = -.921                                               00592
0057          3490 LNW = 6.55108                                                              00593
0058          3500 GO TO IBR, (2960,2990,3020,3050)                                           00594
             C     200 CUT                                                                    00595
0059          3520 IF(DWD .LT. 1000.) A = .00014*DWD-.973                                     00596
0060          3530 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000066 *DWD-.899              00597
0061          3540 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000011 *DWD-.789              00598
0062          3550 IF(DWD .GE. 4000.) A = .00000166*DWD-.752                                  00599
0063          3560 LNW = 5.29832                                                              00600
0064          3570 GO TO IBR, (2960,2990,3020,3050)                                           00601
             C     400 CUT                                                                    00602
0065          3580 CONTINUE                                                                   00603
0066          3590 IF(DWD .LT. 1000.) A = .000068*DWD-.989                                    00604
0067          3600 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000045*DWD-.966               00605
0068          3610 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000003*DWD-.882               00606
0069          3620 IF(DWD .GE. 4000.) A = .00000216*DWD-.879                                  00607
0070          3630 LNW = 5.99146                                                              00608
0071          3640 GO TO IBR, (2960,2990,3020,3050)                                           00609
             C     600 CUT                                                                    00610
0072          3650 CONTINUE                                                                   00611
0073          3660 IF(DWD .LT. 1000.) A = .00004*DWD-.979                                     00612
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0074      3670 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000032*DWD-.971
0075      3680 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000002*DWD-.911
0076      3690 IF (DWD .GE. 4000.) A = .00000166*DWD-.91
0077      3700 LAW = 6.19693
0078      3710 GO TO IBR, (2960,2990,3020,3050)
     C
     C  CUT SECTIONS--STABILITY C (CLAS=3)
     C     OPEN CUT
0079      3740 IF (DWD .LT. 1000.) A = .000088*DWD-.991
0080      3750 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000037*DWD-.940
0081      3760 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000003*DWD-.872
0082      3770 IF (DWD .GE. 4000.) A = .000001*DWD-.864
0083      3780 LAW = 6.55108
0084      3790 GO TO IBR, (2960,2990,3020,3050)
     C     500 CUT
0085      3800 IF (DWD .LT. 1000.) A = .000072*DWD-.975
0086      3810 IF (DWD .GE. 1000. .AND. DWD .LT. 2000) A = .000049 *DWD-.952
0087      3820 IF (DWD .GE. 2000. .AND. DWD .LT. 4000) A = .0000045*DWD-.863
0088      3830 IF (DWD .GE. 4000.) A = .000002*DWD-.853
0089      3840 LAW = 6.39693
0090      3850 GO TO IBR, (2960,2990,3020,3050)
     C     200 CUT
0091      3880 IF (DWD .LT. 1000.) A = .00018*DWD-.97
0092      3890 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000091 *DWD-.881
0093      3900 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .0000085*DWD-.716
0094      3910 IF (DWD .GE. 4000.) A = .000004*DWD-.698
0095      3920 LAW = 6.19932
0096      3930 GO TO IBR, (2960,2990,3020,3050)
     C     400 CUT
0097      3950 IF (DWD .LT. 1000.) A = .000106*DWD-.992
0098      3960 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000065 *DWD-.951
0099      3970 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .0000055*DWD-.832
0100      3980 IF (DWD .GE. 4000.) A = .00000233*DWD-.819
0101      3990 LAW = 6.53140
0102      4000 GO TO IBR, (2960,2990,3020,3050)
     C
     C  CUT SECTIONS--STABILITY D (CLAS=4)
     C     OPEN CUT
0103      4030 IF (DWD .LT. 1000.) A = .000117*DWD-.968
0104      4040 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000058*DWD-.909
0105      4050 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000005*DWD-.803
0106      4060 IF (DWD .GE. 4000.) A = .00000162*DWD-.789
0107      4070 LAW = 6.55108
0108      4080 GO TO IBR, (2960,2990,3020,3050)
     C     500 CUT
0109      4090 CONTINUE
0110      4100 IF (DWD .LT. 1000.) A = .000117*DWD-.968
0111      4110 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000058  *DWD-.909
0112      4120 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000005  *DWD-.803
0113      4130 IF (DWD .GE. 4000. .AND. DWD .LT.12000.) A = .00000325*DWD-.796
0114      4140 IF (DWD .GE.12000.) A = -.757
0115      4150 LAW = 6.38693
0116      4160 GO TO IBR, (2960,2990,3020,3050)
     C     400 CUT
0117      4170 CONTINUE
0118      4180 IF (DWD .LT. 1000.) A = .000117*DWD-.968
0119      4190 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000081  *DWD-.932
0120      4200 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000008  *DWD-.786
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0121          4230 IF(DWD .GE. 4000. .AND. DWD .LT.12000.) A = .00000375*DWD-.769     00671
0122          4240 IF(DWD .GE.12000.) A = -.724                                       00672
0123          4250 LNW = 5.99146                                                      00673
0124          4260 GO TO IBR, (2960,2990,3020,3050)                                   00674
              C     300 CUT                                                           00675
0125          4270 CONTINUE                                                           00676
0126          4280 IF(DWD .LT. 1000.) A = .00017*DWD-.985                             00677
0127          4290 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000098  *DWD-.913     00678
0128          4300 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000009  *DWD-.735     00679
0129          4310 IF(DWD .GE. 4000. .AND. DWD .LT.12000.) A = .00000687*DWD-.726     00680
0130          4320 IF(DWD .GE.12000.) A = -.644                                       00681
0131          4330 LNW = 5.70378                                                      00682
0132          4340 GO TO IBR, (2960,2990,3020,3050)                                   00683
              C     200 CUT                                                           00684
0133          4350 IF(DWD .LT. 1000) A = .000215*DWD-.969                             00685
0134          4360 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000125 *DWD-.879      00686
0135          4370 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000009 *DWD-.647      00687
0136          4380 IF(DWD .GE. 4000. .AND. DWD .LT.12000.) A = .0000055*DWD-.633      00688
0137          4390 IF(DWD .GE.12000.) A = -.567                                       00689
0138          4400 LNW = 5.29832                                                      00690
0139          4410 GO TO IBR, (2960,2990,3020,3050)                                   00691
              C                                                                       00692
              C  CUT SECTIONS--STABILITY F (CLAS=5)                                   00693
              C     OPEN CUT                                                          00694
0140          4430 IF(DWD .LT. 1000.) A =.00015*DWD-.92                               00695
0141          4440 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .00009   *DWD-.86     00696
0142          4450 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000007  *DWD-.694    00697
0143          4460 IF(DWD .GE. 4000. .AND. DWD .LT.10000.) A = .00000133*DWD-.671     00698
0144          4470 IF(DWD .GE.10000.) A = -.658                                       00699
0145          4480 LNW = 6.55108                                                      00700
0146          4490 GO TO IBR, (2960,2990,3020,3050)                                   00701
              C     250 CUT                                                           00702
0147          4510 IF(DWD .LT. 1000.) A = .00025*DWD-.949                             00703
0148          4520 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000146  *DWD-.845     00704
0149          4530 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000015  *DWD-.583     00705
0150          4540 IF(DWD .GE. 4000. .AND. DWD .LT.10000.) A = .00000652*DWD-.549     00706
0151          4550 IF(DWD .GE.10000.) A = .00000091*DWD-.493                          00707
0152          4560 LNW = 5.29832                                                      00708
0153          4570 GO TO IBR, (2960,2990,3020,3050)                                   00709
              C     400 CUT                                                           00710
0154          4590 CONTINUE                                                           00711
0155          4600 IF(DWD .LT. 1000.) A = .00015*DWD-.92                              00712
0156          4610 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000091 *DWD-.86       00713
0157          4620 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .0000080*DWD-.696      00714
0158          4630 IF(DWD .GE. 4000. .AND. DWD .LT.10000.) A = .0000073*DWD-.693      00715
0159          4640 IF(DWD .GE.10000.) A = -.620                                       00716
0160          4650 LNW = 5.99146                                                      00717
0161          4660 GO TO IBR, (2960,2990,3020,3050)                                   00718
              C     600 CUT                                                           00719
0162          4680 CONTINUE                                                           00720
0163          4690 IF(DWD .LT. 1000.) A = .00015*DWD-.92                              00721
0164          4700 IF(DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .00009 *DWD-.86        00722
0165          4710 IF(DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000009*DWD-.698       00723
0166          4720 IF(DWD .GE. 4000. .AND. DWD .LT.10000.) A = .000001*DWD-.666       00724
0167          4730 IF(DWD .GE.10000.) A = -.656                                       00725
0168          4740 LNW = 6.39693                                                      00726
0169          4750 GO TO IBR, (2960,2990,3020,3050)                                   00727
              C                                                                       00728
```

```
      C [illegible] STABILITY F (CLAS=6)
      C [illegible]
0170   4760 [illegible] 1000.) A = .000216*DWD-.904
0171   4770 [illegible] 1000. .AND. DWD .LT. 2000.) A = .000111   *DWD-.799
0172   4780 [illegible] 2000. .AND. DWD .LT. 4000.) A = .000013   *DWD-.603
0173   4790 [illegible] 4000. .AND. DWD .LT.10000.) A = .00000466*DWD-.57
0174   4800 [illegible] 10000.) A = .0000058*DWD-.529
0175   481[illegible]
0176   4820 [illegible] 2960,2990,3020,3050)
      C [illegible]
0177   4830 CONTINUE
0178   4840 IF (DWD .LT. 1000.) A = .000216*DWD-.904
0179   4850 IF (DWD .GE. 1000. .AND. DWD .LT. 2000.) A = .000111   *DWD-.799
0180   4860 IF (DWD .GE. 2000. .AND. DWD .LT. 4000.) A = .000013   *DWD-.603
0181   4870 IF (DWD .GE. 4000. .AND. DWD .LT.10000.) A = .00000463*DWD-.57
0182   4880 [illegible] 10000.) A = .0000058*DWD-.529
0183   4890 [illegible] 6.1969)
0184   4900 [illegible] 2960,2990,3020,3050)
      C [illegible]
0185   4920 [illegible]) A = .000254*DWD-.91
0186   4930 [illegible] 1000. .AND. DWD .LT. 2000.) A = .000163   *DWD-.819
0187   4940 [illegible] 2000. .AND. DWD .LT. 4000.) A = .000022   *DWD-.537
0188   4950 [illegible] 4000. .AND. DWD .LT.10000.) A = .00000933*DWD-.486
0189   4960 [illegible] .GE.10000.) A = .00000108*DWD-.404
0190   4970 [illegible] 5.79832
0191   4980 [illegible] 2960,2990,3020,3050)
      C [illegible]
0192   4990 [illegible]
0193   50[illegible] 1000.) A = .000216*DWD-.904
0194   50[illegible] .AND. DWD .LT. 2000.) A = .000111   *DWD-.799
0195   5020 [illegible] 2000. .AND. DWD .LT. 4000.) A = .000013   *DWD-.603
0196   5030 [illegible] 4000. .AND. DWD .LT.10000.) A = .00000733*DWD-.580
0197   50[illegible] .GE.10000.) A = .0000058*DWD-.513
0198   50[illegible]
0199   50[illegible] 2960,2990,3020,3050)
      C
      C [illegible]
      C
0200   5[illegible] 5865)
0201   5[illegible]
      C
      C [illegible] VALUE
0202   5110 [illegible] 3370,3370,3310,3250,3190,3150), IWID
0203   5120 [illegible] 3520,3520,3580,3580,3650), IWID
0204   5130 [illegible] 3880,3880,3950,3950,3810), IWID
0205   5140 [illegible] 4340,4340,4250,4170,4170,4090), IWID
0206   5[illegible] 4510,4510,4580,4580,4660), IWID
0207   5[illegible] 4920,4990,4990,4830), IWID
      C [illegible]
0208   5180 [illegible] 3250,3190,3190,3100), IWID
0209   5190 [illegible] 3580,3650,3650,3450), IWID
0210   5200 GO TO (3950,3950,3950,3810,3810,3740), IWID
0211   5210 GO TO (4250,4250,4170,4090,4090,4030), IWID
0212   5220 GO TO (4580,4580,4580,4660,4660,4430), IWID
0213   5230 GO TO ([illegible]90,4990,4990,4830,4830,4760), IWID
0214        END
```

```
0001                  SUBROUTINE    SIGMAY(CLAS,X,SIGY)                                    00785
                      C                                                                    00786
                      C  THE SUBROUTINE SIGMAY CALCULATES THE HORIZONTAL PARAMETER, SIGMA Y. 00787
                      C  SIGMAY IS CALLED BY PCON AT 2625.                                 00788
                      C  SIGMAY CALLS NO SUBROUTINES.                                      00789
                      C                                                                    00790
0002                  INTEGER  CLAS                                                        00791
                      C                                                                    00792
                      C  INPUT PARAMETERS:                                                 00793
                      C     CLAS = STABILITY CLASS (1-6 = A-F)                             00794
                      C     X    = DISTANCE FROM EDGE OF SHOULDER TO RECEPTOR (METERS)     00795
                      C                                                                    00796
                      C  OUTPUT PARAMETERS:                                                00797
                      C     SIGY = SIGMA Y                                                 00798
                      C                                                                    00799
0003                   5350 IF(CLAS .GT. 0 .AND. CLAS .LT. 7) GO TO 5380                   00800
0004                   5360 WRITE(6,5361)                                                 00801
0005                   5361 FORMAT(// 10X, 'STABILITY CLASS NOT RECOGNIZABLE.' )          00802
0006                   5370 STOP                                                          00803
0007                   5380 IF(X .LE. 10.) GO TO 5400                                     00804
0008                   5390 WRITE(6,5391)                                                 00805
0009                   5391 FORMAT(// 10X, 'DISTANCE TOO GREAT. MODEL NOT APPLICABLE.' )  00806
0010                   5400 IF(X .GE. .001) GO TO 5450                                    00807
0011                   5410 SIGY = 8.                                                     00808
0012                   5430 RETURN                                                        00809
0013                   5450 CONTINUE                                                      00810
0014                   5460 GO TO (5890,5940,5990,6040,6090,6140), CLAS                   00811
                      C                                                                    00812
                      C     STABILITY A (CLAS=1)                                           00813
0015                   5890 IF(X .LT. .9)                    SIGY= 242.36*X**.494       00814
0016                   5900 IF(X .GE. .9 .AND. X .LT. 2.)    SIGY= 247.5 *X**.692       00815
0017                   5910 IF(X .GE. 2.)                    SIGY= 215.2 *X**.898       00816
0018                   5920 RETURN                                                        00817
                      C                                                                    00818
                      C     STABILITY B (CLAS=2)                                           00819
0019                   5940 IF(X .LT.  .9)                    SIGY=169.*X**.442         00820
0020                   5950 IF(X .GE.  .9 .AND. X .LT. 1.5)  SIGY=172.*X**.707         00821
0021                   5960 IF(X .GE. 1.5)                    SIGY=161.*X**.874         00822
0022                   5970 RETURN                                                        00823
                      C                                                                    00824
                      C     STABILITY C (CLAS=3)                                           00825
0023                   5990 IF(X .LT.  .8)                    SIGY= 120.  *X**.392      00826
0024                   6000 IF(X .GE.  .8 .AND. X .LT. 1.5)  SIGY= 128.4 *X**.692      00827
0025                   6010 IF(X .GE. 1.5)                    SIGY= 121.77*X**.817      00828
0026                   6020 RETURN                                                        00829
                      C                                                                    00830
                      C     STABILITY D (CLAS=3)                                           00831
0027                   6040 IF(X .LT.  .6)                    SIGY= 86.96*X**.346       00832
0028                   6050 IF(X .GE.  .6 .AND. X .LT. 1.5)  SIGY= 98.65*X**.588       00833
0029                   6060 IF(X .GE. 1.5)                    SIGY= 89.6 *X**.826       00834
0030                   6070 RETURN                                                        00835
                      C                                                                    00836
                      C     STABILITY E (CLAS=4)                                           00837
0031                   6090 IF(X .LT.  .7)                    SIGY= 65.*X**.304         00838
0032                   6100 IF(X .GE.  .7 .AND. X .LT. 1.5)  SIGY= 70.*X**.494         00839
0033                   6110 IF(X .GE. 1.5)                    SIGY= 61.*X**.82          00840
0034                   6120 RETURN                                                        00841
                      C                                                                    00842
```

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FORTRAN IV G LEVEL  21                  SIGMAY              DATE = 75245          10/29/14

              C     STABILITY F                                                          00843
0035           6140 IF(X .LT.  .6)                        SIGY= 49. *X**.263         00844
0036           6150 IF(X .GT.  .6 .AND. X .LT. 1.5)       SIGY= 53.5*X**.435         00845
0037           6160 IF(X .GT. 1.5 .AND. X .LT. 3.0)       SIGY= 49. *X**.653         00846
0038           6170 IF(X .GT. 3.0)                        SIGY= 38.6*X**.876         00847
0039           6180 RETURN                                                           00848
0040                END                                                              00849
```

```
0001                  SUBROUTINE    SIGMAZ(CLAS,X,SIGZ)                                  00850
                      C                                                                  00851
                      C  THE SUBROUTINE SIGMAZ CALCULATES THE VERTICLE PARAMETER, SIGMA Z.  00852
                      C  SIGMAZ IS CALLED BY XCON AT 2590 AND BY PCON AT 2620.           00853
                      C  SIGMAZ CALLS NO SUBROUTINES.                                    00854
0002                  INTEGER  CLAS                                                      00855
                      C                                                                  00856
                      C  INPUT PARAMETERS:                                               00857
                      C     CLAS = STABILITY CLASS (1-6 = A-F)                           00858
                      C     X    = DISTANCE FROM EDGE OF SHOULDER TO RECEPTOR (METERS)   00859
                      C  OUTPUT PARAMETERS:                                              00860
                      C     SIGZ = SIGMA Z                                               00861
                      C                                                                  00862
0003                   2820 IF (CLAS .LT. 1) GO TO 3380                                  00863
0004                   2830 IF (CLAS .GT. 6) GO TO 3380                                  00864
0005                   2840 IF (X .GT. 10.)  GO TO 3360                                  00865
0006                   2850 IF (X .GE. .001) GO TO 2940                                  00866
0007                   2860 SIGZ = 4.                                                    00867
0008                   2870 RETURN                                                       00868
                      C                                                                  00869
0009                   2940 GO TO (3000,3070,3140,3210,3270,3320), CLAS                  00870
                      C                                                                  00871
                      C     STABILITY A (CLAS=1)                                         00872
0010                   3000 IF (X .LT. .04)  SIGZ=47.4*X**.357                           00873
0011                   3010 IF (X .GE. .04 .AND. X .LT. .1) SIGZ=91.*X**.562             00874
0012                   3020 IF (X .GE. .1  .AND. X .LT. .2) SIGZ=148.*X**.782            00875
0013                   3030 IF (X .GE. .2  .AND. X .LT. .4) SIGZ=300.*X**1.22            00876
0014                   3040 IF (X .GE. .4)   SIGZ=489.*X**1.74                           00877
0015                   3050 RETURN                                                       00878
                      C                                                                  00879
                      C     STABILITY B (CLAS=2)                                         00880
0016                   3070 IF (X .LT. .1)                    SIGZ=34.9*X**.314          00881
0017                   3080 IF (X .GE. .1  .AND. X .LT. .2) SIGZ=62. *X**.565            00882
0018                   3090 IF (X .GE. .2  .AND. X .LT. .4) SIGZ=78. *X**.71             00883
0019                   3100 IF (X .GE. .4  .AND. X .LT. 1.) SIGZ=105.*X**1.04            00884
0020                   3110 IF (X .GE. 1.)                    SIGZ=105.*X**1.104         00885
0021                   3120 RETURN                                                       00886
                      C                                                                  00887
                      C     STABILITY C (CLAS=3)                                         00888
0022                   3140 IF(X .LT. .15)                    SIGZ=28.4*X**.283          00889
0023                   3150 IF(X .GE. .15 .AND. X .LT. .3) SIGZ=45.8*X**.536             00890
0024                   3160 IF(X .GE. .3  .AND. X .LT. .6) SIGZ=49. *X**.594             00891
0025                   3170 IF(X .GE. .6  .AND. X .LT. 1.) SIGZ=58. *X**.922             00892
0026                   3180 IF(X .GE. 1.0)                    SIGZ=58. *X**.909          00893
0027                   3190 RETURN                                                       00894
                      C                                                                  00895
                      C                                                                  00896
                      C     STABILITY D (CLASS=4)                                        00897
0028                   3210 IF(X .LT. .2)                     SIGZ=22.4*X**.249          00898
0029                   3220 IF(X .GE. .2  .AND. X .LT. .5) SIGZ=26.9*X**.36              00899
0030                   3230 IF(X .GE. .5  .AND. X .LT. 1.) SIGZ=31.4*X**.534             00900
0031                   3240 IF(X .GE. 1.0)                    SIGZ=31.4*X**.652          00901
0032                   3250 RETURN                                                       00902
                      C                                                                  00903
                      C     STABILITY E (CLAS=5)                                         00904
0033                   3270 IF(X .LT. .3)                     SIGZ=17.44*X**.213         00905
0034                   3280 IF(X .GE. .3  .AND. X .LT. .7) SIGZ=20.32*X**.340            00906
                                                                                         00907
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FORTRAN IV G LEVEL  21                    SIGMAZ              DATE = 75245          10/29/14

0035          3290 IF(X .GE. .7)                    SIGZ=21.98*X**.561                      00908
0036          3300 RETURN                                                                   00909
             C                                                                              00910
             C     STABILITY F (CLASS=6)                                                    00911
0037          3320 IF(X .LT. .5)                    SIGZ=13.6 *X**.177                      00912
0038          3330 IF(X .GE. .5  .AND. X .LT. 1.5)SIGZ=14.68*X**.289                        00913
0039          3340 IF(X .GE. 1.5)                   SIGZ=13.2 *X**.552                      00914
0040          3350 RETURN                                                                   00915
             C                                                                              00916
0041          3360 WRITE(6,3361)                                                            00917
0042          3361 FORMAT(// 10X, 'DISTANCE TOO GREAT.MODEL NOT APPLICABLE' )               00918
0043          3370 STOP                                                                     00919
0044          3380 WRITE(6,3381)                                                            00920
0045          3381 FORMAT(// 10X, 'STABILITY CLASS IS NOT RECOGNIZABLE.' )                  00921
0046          3390 STOP                                                                     00922
0047               END                                                                      00923
```

HIWAY PROGRAM LISTING

This section contains a listing of the program HIWAY and its five associated subprograms, RELCO, SIGMA, ATH, LIMIT, and BLK DATA, as compiled under an IBM FORTRAN IV, G-level compiler and implemented for the AIRPOL study on Virginia's Department of Highways and Transportation IBM 370/158 computer running under OS release MFT 21.7 with Hasp II and 1 megabyte of core.

```
                C        THIS PROGRAM CALCULATES THE CONCENTRATION FROM A LINE SOURCE   00000010
                C         AT EACH OF A NUMBER OF RECEPTORS. SUBROUTINE RELCO            00000020
                C         IS CALLED WHICH IN TURN CALLS SUBROUTINE SIGMA.               00000030
0001                   COMMON QLS(24),HEAD(20)                                          000040
0002                   COMMON /A/ RR,REP1,REP2,GY(6),GZ(6,5)                            000050
0003                   COMMON /B/ XVZ(6),XVY(6),XVYC(6),XVZC(6),XXVY,XXVZ               000060
0004                   IRD=5                                                         00000070
0005                   IWRI = 6                                                      00000080
0006                12 FORMAT (8F10.0)                                               00000090
0007                14 FORMAT(20A4)                                                  00000100
0008                15 FORMAT('1',20A4///)                                           000110
0009                16 FORMAT(' WIDTH OF AT-GRADE HIGHWAY IS',F8.1,' M'/' WIDTH OF CENTER  000120
                     1 STRIP IS',F8.1,' M')                                          000130
0010                17 FORMAT(' EMISSION RATE (GRAMS/SECOND*METER) OF',I3,' LANE(S)'/' ',  000140
                     18E12.3)                                                        000150
0011                18 FORMAT(' THE SCALE OF THE COORDINATE AXES IS',F10.4,' KM'//'-  REC  000160
                     1EPTOR    LOCATION      HEIGHT    CONCENTRATION '/7X,'X',11X,'Y',  000170
                     210X,'Z(M)      UGM/METER**3    PPM')                           000180
0012                19 FORMAT(' ENDPOINTS OF THE LINE SOURCE'/' ',F9.3,',',F9.3,' AND',  000190
                     1F9.3,',',F9.3/' EMISSION HEIGHT IS',F8.3,' METERS')            000200
0013                20 FORMAT(' WIND DIRECTION IS',F7.0,'  DEGREES'/' WIND SPEED IS',F7.1  000210
                     1,' METERS/SEC'/' STABILITY CLASS IS',I3/' HEIGHT OF LIMITING LID I  000220
                     2S',F8.1,' METERS')                                             000230
0014                30 FORMAT(' ',3(F10.4,2X),F10.1,3X,F10.3)                        000240
                C       READ HEADER CARD                                            000250
0015                35 READ(IRD,14) HEAD                                             000260
0016                   WRITE(IWRI,15) HEAD                                           000270
0017                   READ(IRD,12,END=975) REP1,SEP1,REP2,SEP2,H,WIDTH,CNTR,XNL     000280
                C         REP1,SEP1 ARE THE COORDINATES OF AN END POINT OF THE LINE  000290
                C              SOURCE IN SOURCE COORDINATES.                          000300
                C         REP2,SEP2 ARE THE COORDINATES OF THE OTHER END POINT OF THE  000310
                C              LINE SOURCE IN SOURCE COORDINATES.                     000320
                C         H IS THE EFFECTIVE EMISSION HEIGHT OF THE SOURCE IN METERS.  000330
                C         WIDTH IS THE HIGHWAY WIDTH (M) FOR AT GRADE.               000340
                C         CNTR IS THE WIDTH OF THE CENTER STRIP (M).                 000350
                C         XNL IS THE NUMBER OF LANES FOR THE AT-GRADE HIGHWAY.       000360
0018                   WRITE(IWRI,19) REP1,SEP1,REP2,SEP2,H                          000370
0019                   NL = XNL                                                      000380
0020                   DELW = (WIDTH-CNTR) / (XNL*1000.)                             000390
0021                   READ(IRD,12) (QLS(I),I=1,NL)                                  000400
                C         QLS IS THE LINE SOURCE STRENGTH (GRAMS/SECOND*METER)       000410
0022                   WRITE(IWRI,17) NL,(QLS(I),I=1,NL)                             000420
0023                   READ(IRD,12) CUT,WIDTC                                        000430
                C     CUT SECTION.                                                  000440
                C     WIDTC IS THE WIDTH OF THE TOP OF THE CUT SECTION (M).         000450
0024                   IF(CUT .EQ. 0.) GO TO 101                                     000460
                C     DQLS IS THE CUT SECTION SOURCE STRENGTH                       000470
0025                   DQLS = 0.                                                     000480
0026                   DO 40 I=1,NL                                                  000490
0027                40 DQLS = DQLS + QLS(I)                                          000500
0028                   XNDL = 10.                                                    000510
0029                   NL = XNDL                                                     000520
0030                   DQLS = DQLS / XNDL                                            000530
0031                   DELW = WIDTC / (XNDL*1000.)                                   000540
0032                   WRITE(IWRI,29) WIDTC                                          000550
0033                29 FORMAT(' WIDTH OF TOP OF CUT SECTION IS',F10.3,' M')          000560
0034                   DO 100 I=1,NL                                                 000570
0035               100 QLS(I) = DQLS                                                 000580
```

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0036                GO TO 102
0037          101 WRITE(IWRI,16) WIDTH,CNTR                                  000590
0038          102 READ(IRD,12) THETA,U,XKST,HL                               000600
0039                KST = XKST                                               000610
0040                UU = U                                                   000620
0041                IF(U .LT. 1.) UU = 1.                                    000630
0042                IF(U .GT. 3.) UU = 3.                                    000640
0043                IF(CUT .GT. 0.) GO TO 4406                               000650
0044                XXVY = XVY(KST)                                          000660
0045                XXVZ = XVZ(KST)                                          000670
0046                GO TO 4407                                               000680
0047           4406 R = (UU-1.) / 2.                                         000690
0048                XXVY = XVYC(KST)-(XVYC(KST)-XVY(KST)) * R                000700
0049                XXVZ = XVZC(KST)-(XVZC(KST)-XVZ(KST)) * R                000710
               C         THETA IS THE WIND DIRECTION IN DEGREES.             000720
               C         U IS THE WIND SPEED IN METERS PER SECOND.           000730
               C         KST IS THE STABILITY CLASS                          000740
               C         HL IS THE HEIGHT OF THE LIMITING LID                000750
0050           4407 WRITE(IWRI,20) THETA,U,KST,HL                            000760
0051                READ(IRD,12) GS                                          000770
0052                WRITE(IWRI,18) GS                                        000780
               C         GS IS THE MEASURE BETWEEN COORDINATES (KM).         000790
               C                                                             000800
               C         CONVERT COORDINATE SYSTEM SO THAT HIGHWAY IS        000810
               C           ORIENTED ALONG ZERO DEGREES (MATH SYSTEM)         000820
0053                REP1 = REP1 * GS                                         000830
0054                REP2 = REP2 * GS                                         000840
0055                SEP1 = SEP1 * GS                                         000850
0056                SEP2 = SEP2 * GS                                         000860
0057                X1=REP1                                                  000870
0058                Y1=SEP1                                                  00000880
0059                X2=REP2                                                  00000890
0060                Y2=SEP2                                                  00000900
0061                DX=X2-X1                                                 00000910
0062                DY=Y2-Y1                                                 00000920
0063                CALL ATH(DX,DY,ANGH,DANG)                                00000930
0064                REP1=Y1*SIN(ANGH)+X1*COS(ANGH)                           00000940
0065                SEP1=Y1*COS(ANGH)-X1*SIN(ANGH)                           00000950
0066                REP2=Y2*SIN(ANGH)+X2*COS(ANGH)                           00000960
0067                SEP2=Y2*COS(ANGH)-X2*SIN(ANGH)                           00000970
               C         CONVERT WIND DIRECTION WRT HIGHWAY                  00000980
0068                THETA=THETA+DANG                                         00000990
0069                IF(THETA.LT.0.)THETA=THETA+360.                          00001000
0070                IF(THETA.GE.360.)THETA=THETA-360.                        00001010
0071                T =THETA/57.2958                                         00001020
               C         T IS THE WIN DIRECTION IN RADIANS                   00001030
0072                SINT=SIN(T)                                              00001040
0073                COST=COS(T)                                              00001050
               C         SINT AND COST ARE THE SINE AND COSINE OF THE WIND DIRECTION  00001060
               C         P IS THE LENGTH OF THE LINE SOURCE                  00001070
0074                R = REP2 - REP1                                          00001080
0075                RV = SEP2 - SEP1                                           001090
0076                P = SQRT(R * R + RV * RV)                                  001100
0077             75 READ(IRD,12,END=975) XXRR,XXSR,Z                           001110
               C         XXRR,XXSR ARE THE COORDINATES OF THE RECEPTOR.       001120
               C         Z IS THE RECEPTOR HEIGHT IN METERS.                 001130
0078                IF(XXRR .GE. 9999.) GO TO 35                             001140
0079                XXRR = XXRR * GS                                         001150
                                                                             001160
```

```
0080                XXSR = XXSR * GS
0081                CNTS=0.
0082                CLS=0.
                C       CONVERT RECEPTOR COORDINATES WRT HIGHWAY
0083                XRR=XXSR*SIN(ANGH)+XXRR*COS(ANGH)
0084                XSR=XXSR*COS(ANGH)-XXRR*SIN(ANGH)
0085                RR=XRR
0086                A=REP1
0087                B=REP2
0088                DO600IL=1,NL
0089                IF(CUT .NE. 0.) GO TO 76
0090                IF(IL.GT.NL/2.AND.IL.NE.1)CNTS=CNTR/1000.
0091          76    IF(THETA.GT.90..AND.THETA.LE.270.)GOTO77
0092                SR=XSR-DELW*(IL-1)-CNTS
0093                GOTO78
0094          77    SR=XSR+DELW*(IL-1)+CNTS
0095          78    ESTD=0.
0096                SRR=ABS(SEP1-SR)
0097                CALL LIMIT (SRR,T,A,B,P)
                C       CALCULATE DOWNWIND AND CROSSWIND DISTANCES OF RECEPTOR IR,IS
                C        FOR THE ENDPOINTS OF THE LINE SOURCE
0098                R1=(A+RR)
0099                S1=(SEP1-SR)
0100                R2=(B-RR)
0101                S2=(SEP2-SR)
0102                X1=R1*SINT+S1*COST
0103                Y1=S1*SINT-R1*COST
0104                X2=R2*SINT+S2*COST
0105                Y2=S2*SINT-R2*COST
                C       X1,Y1 ARE THE DOWNWIND AND CROSSWIND DISTANCES (KM)
                C        OF RECEPTOR IR,IS FROM ENDPOINT REP1,SEP1 OF THE LINE SOURCE
                C       X2,Y2 ARE THE DOWNWIND AND CROSSWIND DISTANCES (KM)
                C        OF RECEPTOR IR,IS FROM ENDPOINT REP2,SEP2 OF THE LINE SOURCE
                C       TEST FOR AT LEAST ONE ENDPOINT UPWIND OF RECEPTOR - OTHERWISE,
                C        CONCENTRATION  = 0.
                C       CHECK FOR RECEPTOR DOWNWIND OF SOURCE.  IF NOT, SET CONC. = 0.
                C        ELIMINATES THAT PORTION OF THE LINE SOURCE
                C        WHICH IS DOWNWIND OF THE RECEPTOR
0106                IF(X1) 4402,105,4403
0107          4403  IF(X2) 4404,110,110
0108           4404 R = Y2 - Y1
0109                Y2 = Y2 - X2 * R / (X2-X1)
0110                X2=0.
0111                P = SQRT(X1*X1 + R*R)
0112                GOTO110
0113          4402  IF(X2) 500,500,4405
0114           4405 R = Y2 - Y1
0115                Y1 = Y1 - X1 * R / (X2-X1)
0116                X1=0.
0117                P = SQRT(X2*X2 + R*R)
0118                GOTO110
0119          105   IF(X2) 500,110,110
                C       CHECK FOR RECEPTOR BETWEEN CENTERLINE OF PLUMES FROM ENDPOINTS.
                C        IF IT IS DIVIDE SOURCE INTO TWO SEGMENTS (INDX=2), GO TO 150.
0120          110   IF(Y1) 112,120,112
0121          112   IF(Y2) 115,120,115
0122          115   Y3=SIGN(Y1,Y2)
0123                IF(Y3-Y1) 150,120,150
```

```
0124          120 XB=X2                                                          001750
0125              YB=Y2                                                        00001760
0126              PP=P                                                         00001770
0127              INDX=1                                                       00001780
0128              GO TO 210                                                    00001790
0129          150 RV = ABS(Y1)                                                   001800
0130              R = RV / (RV+ABS(Y2))                                          001810
0131              XP = X1 + (X2-X1) * R                                          001820
0132              XB=XP                                                        00001830
0133              YB=0.                                                        00001840
0134              PP = P * R                                                     001850
0135              INDX=2                                                       00001860
0136          210 M=0                                                          00001870
0137              XA=X1                                                          001880
0138              YA=Y1                                                          001890
0139              DX=XB-XA                                                     00001900
0140              DY=YB-YA                                                     00001910
0141              XZA=XA+XXVZ                                                  00001920
0142              XZB=XB+XXVZ                                                  00001930
0143              XYA=XA+XXVY                                                  00001940
0144              XYB=XB+XXVY                                                  00001950
0145              ESTP=0.0                                                     00001960
0146              CALL RELCO(U,Z,H,HL,XZA,XYA,YA,KST,AN,RC1)                   00001970
0147              CALL RELCO(U,Z,H,HL,XZB,XYB,YB,KST,AN,RC2)                   00001980
0148              CURR=(RC1+RC2)*PP/2.                                         00001990
0149              IF(CURR) 215,215,220                                         00002000
0150          220 PREV=CURR                                                    00002010
0151              SUBT=0.0                                                     00002020
0152              M=2*M+1                                                      00002030
0153              DX=DX/2.                                                     00002040
0154              DY=DY/2.                                                     00002050
0155              DO 250 K=1,M,2                                               00002060
0156              X=XA+K*DX                                                    00002070
0157              Y=YA+K*DY                                                    00002080
0158              XZ=X+XXVZ                                                    00002090
0159              XY=X+XXVY                                                    00002100
0160              CALL RELCO(U,Z,H,HL,XZ,XY,Y,KST,AN,RC)                       00002110
0161          250 SUBT=SUBT+RC                                                 00002120
0162              CURR=PREV/2.+SUBT*PP/(M+1)                                   00002130
0163              ESTC=(4.*CURR-PREV)/3.                                       00002140
0164              IF(ESTC-1.E-10) 215,215,255                                  00002150
                  C        ESTC AND ESTP ARE CURRENT AND PREVIOUS RICHARDSON'S 00002160
                  C         EXTRAPOLATIONS.                                   00002170
0165              255 RAT=ABS((ESTC-ESTP)/ESTC)                                00002180
                  C        RAT IS A COMPARISON BETWEEN THE CURRENT AND PREVIOUS VALUES. 00002190
                  C         WHEN RAT BECOMES LESS THAN .0005 THE CURRENT VALUE IS ACCEPTED 00002200
                  C         FOR THE VALUE OF THE INTEGRAL.                    00002210
0166              IF(RAT.LT.0.0005) GOTO300                                    00002220
0167          260 ESTP=ESTC                                                    00002230
0168              GO TO 220                                                    00002240
0169            215 ESTC = 0.0                                                 00002250
0170          300 ESTD=ESTC+ESTD                                               00002260
0171              IF(INDX-1) 500,500,310                                       00002270
0172          310 XA=XP                                                        00002280
0173              YA=0.                                                        00002290
0174              XB=X2                                                        00002300
0175              YB=Y2                                                        00002310
0176              R = ABS(Y2)                                                    002320
```

```
0177              PP = P * R / (ABS(Y1) + R)                                  002330
0178              INDX=1                                                     00002340
0179              GO TO 210                                                  00002350
0180          500 CLSS=ESTD*QLS(IL)*1000.                                    00002360
0181          600 CLS = CLS + CLSS * 1000000.                                  002370
0182              CLSS = CLS * .00087                                          002380
0183              WRITE(IWRI,30) XXRR,XXSR,Z,CLS,CLSS                          002390
0184              GO TO 75                                                     002400
0185          975 CALL EXIT                                                    002410
0186              END                                                        00002420
```

```
FORTRAN IV G LEVEL  21                    RELCO                DATE = 75245          10/20/24

0001                  SUBROUTINE RELCO (U,Z,H,HL,X,XY,Y,KST,AN,RC)                                00002430
0002                  COMMON QLS(24),HEAD(20)                                                      002440
0003                  COMMON /A/ PR,PEPI,REP2,GY(6),GZ(6,5)                                        002450
0004                  COMMON /B/ XVZ(6),XVY(6),XVYC(6),XVZC(6),XXVY,XXVZ                           002460
                C        SUBROUTINE RELCO CALCULATES CHI/Q CONCENTRATION VALUES, RELCO          00002470
                C         CALLS UPON SUBROUTINE SIGMA TO OBTAIN STANDARD DEVIATIONS.            00002480
                C        THE INPUT VARIABLES ARE....                                            00002490
                C         U     WIND SPEED (M/SEC)                                              00002500
                C         Z     RECEPTOR HEIGHT (M)                                             00002510
                C         H     EFFECTIVE STACK HEIGHT (M)                                      00002520
                C         HL=L  HEIGHT OF LIMITING LID (M)                                      00002530
                C         X     DOWNWIND DISTANCE FOR CALCULATING SIGMAZ (KM)                   00002540
                C         XY    DOWNWIND DISTANCE FOR CALCULATING SIGMAY (KM)                   00002550
                C         Y     DISTANCE RECEPTOR IS CROSSWIND FROM SOURCE (KM)                 00002560
                C         KST   STABILITY CLASS                                                 00002570
                C        THE OUTPUT VARIABLES ARE....                                           00002580
                C         AN    THE NUMBER OF TIMES THE SUMMATION TERM IS EVALUATED             00002590
                C                AND ADDED IN.                                                  00002600
                C         RC    RELATIVE CONCENTRATION (SEC/M**3)                               00002610
                C        THE FOLLOWING EQUATION IS SOLVED --                                    00002620
                C          RC = (1/(2*PI*U*SIGMA Y*SIGMA Z))* (EXP(-0.5*(Y/SIGMA Y)**2))       00002630
                C            (EXP(-0.5*((Z-H)/SIGMA Z)**2) + EXP(-0.5*((Z+H)/SIGMA Z)**2)     00002640
                C              PLUS THE SUM OF THE FOLLOWING 4 TERMS K TIMES (N=1,K) --         00002650
                C                TERM 1= EXP(-0.5*((Z-H-2NL)/SIGMA Z)**2)                      00002660
                C                TERM 2= EXP(-0.5*((Z+H-2NL)/SIGMA Z)**2)                      00002670
                C                TERM 3= EXP(-0.5*((Z-H+2NL)/SIGMA Z)**2)                      00002680
                C                TERM 4= EXP(-0.5*((Z+H+2NL)/SIGMA Z)**2)                      00002690
                C        THE ABOVE EQUATION IS SIMILAR TO EQUATION (5.8) P 36 IN                00002700
                C         WORKBOOK OF ATMOSPHERIC DISPERSION ESTIMATES WITH THE ADDITION        00002710
                C         OF THE EXPONENTIAL INVOLVING Y.                                       00002720
                C        IWRI IS CONTROL CODE FOR OUTPUT                                        00002730
0005                  IWRI = 6                                                                    002740
                C        IF X IS LESS THAN ZERO,    SET RC=0. AND RETURN.  THIS AVOIDS         00002750
                C         PROBLEMS OF INCORRECT VALUES NEAR THE SOURCE.                         00002760
0006                  IF(X-XVZ(KST)) 30,5,5                                                       002770
0007                5 IF(XY) 30,300,300                                                           002780
                C        CALL SIGMA TO OBTAIN VALUES FOR SY AND SZ                              00002790
0008          300   CALL SIGMA (X,XY,KST,SY,SZ)                                                 00002800
                C         SY = SIGMA Y, THE STANDARD DEVIATION OF CONCENTRATION IN THE          00002810
                C         Y-DIRECTION (M)                                                       00002820
                C         SZ = SIGMA Z, THE STANDARD DEVIATION OF CONCENTRATION IN THE          00002830
                C         Z-DIRECTION (M)                                                       00002840
                C        INITIAL VALUE OF AN SET = 0.                                           00002850
0009                  AN=0.                                                                       00002860
                C        IF THE RECEPTOR IS ABOVE THE LID, WRITE THAT OUT, SET RC = 0.          00002870
                C         AND RETURN.                                                           00002880
0010                  IF(Z-HL)10,10,20                                                            00002890
0011          20      WRITE(IWRI,1)                                                               00002900
0012          1       FORMAT(1X,'RECEPTOR HIGHER THAN LID')                                       00002910
0013          30      RC=0.                                                                       00002920
0014                  RETURN                                                                      00002930
                C        IF THE SOURCE IS ABOVE THE LID, SET RC = 0., AND RETURN.               00002940
0015          10      IF(H-HL)40,40,30                                                            00002950
                C        YD IS CROSSWIND DISTANCE IN METERS.                                    00002960
                C        STATEMENTS 40 TO 250 CALCULATE RC, THE RELATIVE CONCENTRATION,         00002970
                C         USING THE EQUATION DISCUSSED ABOVE.  SEVERAL INTERMEDIATE             00002980
                C         VARIABLES ARE USED TO AVOID REPEATING CALCULATIONS.                   00002990
                C         CHECKS ARE MADE TO BE SURE THAT THE ARGUMENT OF THE                   00003000
```

```
C                [illegible] SPECIAL FUNCTION IS NEVER GREATER THAN 50 (OR LESS [illegible]
C                [illegible] IF 'AN' BECOMES GREATER THAN 45. A LINE OF OUTPUT [illegible]
C                [illegible] PROVIDED INFORMING OF THIS.
0016          40 [illegible] = Y / SY
0017             [illegible] = YC * YD
0018             [illegible] 50.30.30
0019          50 [illegible] 18*U*SY*SZ*EXP(C1))
0020             [illegible]
                 [illegible]
0022             [illegible]
0023             [illegible] **2
0024             [illegible] **2
0025             [illegible] 60.70.70
0026          60 [illegible]
0027             [illegible]
0028          70 [illegible]
0029          80 [illegible] 100.100
0030          90 [illegible]
0031             [illegible]
0032         100 [illegible]
0033         110 [illegible]
0034             [illegible]
0035         120 [illegible]
0036             [illegible]
0037             [illegible]
0038             [illegible]
0039             [illegible]
0040             [illegible]
0041             [illegible]
0042             [illegible]
0043             [illegible]
0044             [illegible]
0045             [illegible] 140.140
0046         130 [illegible]
0047             [illegible]
0048         140 [illegible]
0049         150 [illegible] 170.170
0050         160 [illegible]
0051             [illegible]
0052         170 [illegible]
0053         180 [illegible] 200.200
0054         190 [illegible]
0055             [illegible]
0056         200 [illegible]
0057         210 [illegible] 230.230
0058         220 [illegible]
0059             [illegible]
0060         230 [illegible]
0061         240 [illegible]
0062             [illegible]
0063             [illegible] 260.260
0064         260 [illegible] 270.270
0065           270 [illegible] X,Y,H,T,SUM
0066               2 FORMAT( [illegible] GREATER THAN 45'/6X,'X = ',F7.0,5X,'Y = ',F7.0,5X,'H
                  1 [illegible] = ',F7.3,5X,'SUM = ',F7.3)
0067         250 [illegible] AD*SUM)
0068             [illegible]
0069             [illegible]
```

```
FORTRAN IV G LEVEL  21                SIGMA              DATE = 75245          10/20/24

0001                SUBROUTINE SIGMA(X,XY,KST,SY,SZ)                              00003590
0002                COMMON QLS(24),HEAD(20)                                         003600
0003                COMMON /A/ RR,REP1,REP2,GY(6),GZ(6,5)                           003610
0004                COMMON /B/ XVZ(6),XVY(6),XVYC(6),XVZC(6),XXVY,XXVZ              003620
0005                AZ=X*1000.                                                    00003630
0006                AY=XY*1000.                                                   00003640
0007                IF(AZ-5000.)641,643,640                                       00003650
0008          640   IZ=1                                                          00003660
0009                GOTO644                                                       00003670
0010          641   IF(AZ.GE.500.) GOTO643                                        00003680
0011                IZ=3                                                          00003690
0012                GOTO644                                                       00003700
0013          643   IZ=2                                                          00003710
0014          644   SZ=GZ(IZ,KST)*AZ**GZ(IZ+3,KST)                               00003720
0015                SY=GY(KST)*AY**0.903                                          00003730
0016                RETURN                                                        00003740
0017                END                                                           00003750
```

```
FORTRAN IV G LEVEL  21                ATH                DATE = 75245          10/20/2
0001                  SUBROUTINE ATH(DX,DY,ANGH,DANG)
0002                  COMMON GLS(24),HEAD(20)
0003                  COMMON /A/ RR,REP1,REP2,GY(6),GZ(6,5)
0004                  COMMON /B/ XVZ(6),XVY(6),XVYC(6),XVZC(6),XXVY,XXVZ
0005                  RAD=57.2958
0006                  IF(DX)5,6,7
0007            5     IF(DY.EQ.0.)GOTO9
0008                  ANGH=ATAN(DY/DX)*RAD+180.
0009                  GOTO16
0010            9     ANGH=180.
0011                  GOTO16
0012            6     IF(DY)10,11,12
0013           10     ANGH=270.
0014                  GOTO16
0015           11     ANGH=0.
0016                  GOTO16
0017           12     ANGH=90.
0018                  GOTO16
0019            7     IF(DY)13,14,15
0020           13     ANGH=ATAN(DY/DX)*RAD+360.
0021                  GOTO16
0022           14     ANGH=360.
0023                  GOTO16
0024           15     ANGH=ATAN(DY/DX)*RAD
0025           16     DANG=ANGH
0026                  ANGH=ANGH/RAD
0027                  RETURN
0028                  END
```

```
FORTRAN IV G LEVEL  21                    LIMIT                    DATE = 75245          10/20/24

0001                  SUBROUTINE LIMIT(XOO,TT,U1,U2,P)                                  00004040
                C         SUBROUTINE LIMIT REDUCES THE LENGTH OF THE LINE             00004050
                C         SOURCE TO PLUS AND MINUS FOUR SIGMY Y'S FROM A POINT        00004060
                C         UPWIND OF THE RECEPTOR                                      00004070
0002                  COMMON QLS(24),HEAD(20)                                           004080
0003                  COMMON /A/ RR,REP1,REP2,GY(6),GZ(6,5)                             004090
0004                  COMMON /B/ XVZ(6),XVY(6),XVYC(6),XVZC(6),XXVY,XXVZ                004100
0005                  FUDGE=0.06                                                  00004110
0006                  A=0.65                                                      00004120
0007                  C=0.903                                                     00004130
0008                  AA=90./57.2958                                              00004140
0009                  BB=270./57.2958                                             00004150
0010                  CC=180./57.2958                                             00004160
0011                  DD=360/57.2958                                              00004170
0012                  DX=1000.                                                    00004180
0013                  T=TT                                                        00004190
0014                  T1=0.                                                       00004200
0015                  T2=0.                                                       00004210
0016                  XO=XOO*1000.                                                00004220
0017                  IF(XO.EQ.0.)GOTO5                                           00004230
0018                  DIST=ABS(U2-U1)                                             00004240
0019                  T=AA-T                                                      00004250
0020                  IF(T.LT.0.)T=DD+T                                           00004260
0021                  IF(T.GE.DD)T=T-DD                                           00004270
0022                  IF(T.GE.AA)GOTO30                                           00004280
                C         ANGLE TO ROAD LT 90 DEG                                 00004290
0023                  ANG=AA-T                                                    00004300
0024                  INDX=1                                                      00004310
0025                  GOTO40                                                      00004320
0026            30    IF(T.GE.CC)GOTO31                                           00004330
                C         ANGLE TO ROAD GT 90 AND LT 180 DEG                      00004340
0027                  ANG=T-AA                                                    00004350
0028                  INDX=2                                                      00004360
0029                  GOTO40                                                      00004370
0030            31    IF(T.GE.BB)GOTO32                                           00004380
                C         ANGLE TO ROAD GT 180 AND LT 270 DEG                     00004390
0031                  ANG=BB-T                                                    00004400
0032                  INDX=3                                                      00004410
0033                  GOTO40                                                      00004420
0034            32    ANG=T-BB                                                    00004430
                C         ANGLE TO ROAD GT 270 AND LT 360 DEG                     00004440
0035                  INDX=4                                                      00004450
0036            40    ANCOS=COS(ANG)                                              00004460
0037                  ANSIN=SIN(ANG)                                              00004470
                C         TEST IF WIND NEARLY PARALLEL TO ROAD                    00004480
0038                  IF(ABS(ANCOS).LT..02)GOTO9                                  00004490
0039                  XCOS=XO/ANCOS                                               00004500
0040                  X=XCOS                                                      00004510
                C         TEST IF WIND NEARLY PERPENDICULAR TO ROAD               00004520
0041                  IF(ABS(ANSIN).LT..02)GOTO11                                 00004530
0042            1     X=X+DX                                                      00004540
0043                  ASY=A*(X+XXVY)**C                                           00004550
0044                  T1=ASY/ANCOS                                                00004560
0045                  IF(ABS(T1).GT.DIST)GOTO3                                    00004570
0046                  TP=(X-XCOS)/ANSIN                                           00004580
0047                  IF(TP.LT.T1)GOTO3                                           00004590
0048                  TP=(X-XCOS)/ANSIN                                           00004600
0049                  IF(TP.LT.T1)GOTO3                                           00004610
```

```
0050                X=X-DX
0051                IF(DX.LT.1.)GOTO3
0052                DX=DX/10.
0053                GOTO1
0054          3     X=XCOS
0055                DX=-1.
0056          4     X=X+DX
0057                IF(X.LE.0.)GOTO5
0058                ASY=A*(X+XXVY)**C
0059                T2=ASY/ANCOS
0060                IF(ABS(T2).GT.DIST)GOTO6
0061                TP=(XCOS-X)/ANSIN
0062                IF(TP.LT.T2)GOTO4
0063          6     T1=T1/1000.
0064                T2=T2/1000.
0065                R = XOO * TAN(ANG)
0066                GOTO(51,52,52,51),INDX
0067             51 U1 = RR + R - T2 - FUDGE
0068                U2 = RR + R + T1 + FUDGE
0069                GOTO8
0070             52 U1 = RR - R - T1 - FUDGE
0071                U2 = RR - R + T2 + FUDGE
0072          8     IF(U1.LT.REP1)U1=REP1
0073                IF(U1.GT.REP2)GOTO7
0074                IF(U2.GT.REP2)U2=REP2
0075                P=ABS(U2-U1)
0076                IF(U2.LT.REP1)GOTO7
0077                GOTO5
              C        WIND NEARLY PERPENDICULAR TO ROAD
0078          11    T1=A*(X+XXVY)**C
0079                T2=T1
0080                U1=RR-T1/1000.-FUDGE
0081                U2=RR+T2/1000.+FUDGE
0082                GOTO8
              C        WIND NEARLY PARALLEL TO ROAD
0083          9     U1=REP1
0084                U2=REP2
0085          70    P=ABS(U2-U1)
0086                GOTO5
0087          7     P=0.
0088          5     CONTINUE
0089                RETURN
0090                END
```

```
FORTRAN IV G LEVEL  21                BLK DATA          DATE = 75245          10/20/24

0001                  BLOCK DATA                                                        00005050
0002                  COMMON /A/ RR,REP1,REP2,GY(6),GZ(6,5)                             00005060
0003                  COMMON /B/ XVZ(6),XVY(6),XVYC(6),XVZC(6),XXVY,XXVZ                00005070
0004                  DATA GY/0.4,0.295,0.2,0.13,0.098/                                 00005080
0005                  DATA GZ/2*0.,0002539,0.0383,2*2.0886,1.2812,2*0.04936,0.1393,2*1.1100005090
                     *37,0.9467,0.1154,0.1014,0.112,0.9109,0.926,0.91,0.7368,0.2591,0.0800005100
                     *56,0.5642,0.6869,0.865,1.2969,0.2527,0.0818,0.4421,0.6341,0.8155/ 00005110
0006                  DATA XVZ/0.012,0.012,0.017,0.027,0.035,0.058/                     00005120
0007                  DATA XVY/.009,.013,.020,.032,.044,.044/                           00005130
0008                  DATA XVYC/.035,.049,.076,.123,2*0.167/                            00005140
0009                  DATA XVZC/.045,.044,.065,.110,.155,.26/                           00005150
0010                  END                                                               00005160
```

STABILITY CLASS DETERMINATION

The Turner and Pasquill atmospheric stability classes used as inputs to the predictive models in the AIRPOL study were determined using computer programs based on the algorithms given in references 1 and 2, respectively. The specific procedures used in the AIRPOL study and recommended for use with the program AIRPOL-4 (Pasquill) are detailed below.

Turner's Method[1]

I. Determine the net radiation index, NRI, as follows:

1. If the total cloud cover is 10/10 and the ceiling is < 7,000 feet, NRI = 0 (day or night)

2. Nighttime

   a. If total cloud cover ≤ 4/10, NRI = -2.
   b. If total cloud cover > 4/10, NRI = -1.

3. Daytime

   a. Determine the solar altitude, α, from

$$\alpha = \arcsin\left[\sin\delta \times \sin\phi + \cos\left(\frac{12-H}{2\ \pi}\right) \times \cos\delta \times \cos\phi\right]$$

   and

$$\delta = \arctan\left[-\tan 23.5^{o} \times \cos\left(\frac{2\pi(N+10)}{365}\right)\right]$$

   where

   ϕ is the station latitude,

   H is the hour or day (military time), and

   N is the number of days since January 1.

   b. Determine the isolation class number, ICN, from Table 95.

   c. If total cloud cover ≤ 5/10 NRI = ICN.

d. If total cloud cover > 5/10 determine NRI as follows:

1. If ceiling < 7,000 feet, NRI = ICN - 2.
2. If 7,000 ≤ ceiling < 16,000 feet, NRI = ICN-1.
3. If total cloud cover is 10/10, NRI = ICN-1.
   (This applies only to ceilings ≥ 7,000 feet, since 10/10 below 7,000 feet is covered above with NRI = 0.)
4. If steps 1, 2, and 3 are not applicable NRI = ICN.
5. If NRI < 1, let NRI = 1.

II. Determine stability class from Table 96.

TABLE 95

Insolation Class Numbers

Solar Altitude (α)	Insolation	Insolation Class Number
$0^o \leq \alpha \leq 15^o$	Weak	1
$15^o < \alpha \leq 35^o$	Slight	2
$35^o < \alpha \leq 60^o$	Moderate	3
$60^o < \alpha \leq 90^o$	Strong	4

TABLE 96

Turner Stability Categories

Wind Speed (knots)	Net Radiation Index						
	4	3	2	1	0	-1	-2
$0 \leq$ WS <2	A	A	B	C	D	F	F
$2 \leq$ WS <4	A	B	B	C	D	F	F
$4 \leq$ WS <6	A	B	C	D	D	E	F
$6 \leq$ WS <7	B	B	C	D	D	E	F
$7 \leq$ WS <8	B	B	C	D	D	D	E
$8 \leq$ WS <10	B	C	C	D	D	D	E
$10 \leq$ WS <11	C	C	D	D	D	D	E
$11 \leq$ WS <12	C	C	D	D	D	D	D
$12 \leq$ WS	C	D	D	D	D	D	D

Pasquill's Method [2]

I. Nighttime

Determine stability class from Table 97 based on wind speed and cloud cover.

II. Daytime

1. Determine insolation proportionality, IP, as follows:

   a. Determine the solar altitude, α, from equations 1 and 2 in the previous section.
   b. Determine IP from

$$IP = (1 - 0.5 \times F) \times \sin \alpha \qquad (3)$$

   where

   F is the fraction of sky covered by clouds, and
   α is the solar altitude from equations 1 and 2.

2. Determine relative insolation strength, RIS, as follows:

   a. RIS = strong if $0.67 < IP \leq 1.00$
   b. RIS = moderate if $0.33 < IP \leq 0.67$
   c. RIS = slight if $0.00 \leq IP \leq 0.33$

3. Determine stability class from Table 98 based on wind speed and relative insolation strength.

TABLE 97

Pasquill Stability Categories, Nighttime

Surface Wind Speed (knots)	Cloud Cover	
	CC $\geq$ 5/10	CC < 5/10
0 $\leq$ WS $\leq$ 3	E	E
3 < WS $\leq$ 6	D	E
6 < WS $\leq$ 10	D	D
10 < WS $\leq$ 13	D	D
13 < WS	D	D

TABLE 98

Pasquill Stability Categories, Daytime

Surface Wind Speed (knots)	Relative Insolation Strength		
	Strong	Moderate	Slight
0 $\leq$ WS $\leq$ 3	A	B	B
3 < WS $\leq$ 6	A	B	C
6 < WS $\leq$ 10	B	C	C
10 < WS $\leq$ 13	C	C	D
13 < WS	C	D	D

SUMMARY AND RECOMMENDATIONS

This report has quantitatively detailed the data and methods used in the analysis and comparative evaluation of AIRPOL-4. This document should be supplied, along with the other reports in the AIRPOL series, as evidence supporting the validity of AIRPOL-4. This report should also be made available to interested governmental agencies as a source of air quality field data.

REFERENCES

1. Turner, D. B., "A Diffusion Model for an Urban Area", Journal of Applied Meteorology, 3, 83-91, 1964.

2. Ludwig, F. L., A. E. Moon, W. B. Johnson, and R. L. Mancuso, A Practical Multipurpose Urban Diffusion Model for Carbon Monoxide, Stanford Research Institute, Menlo Park, California, 1970.