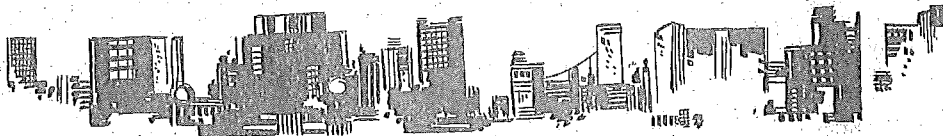
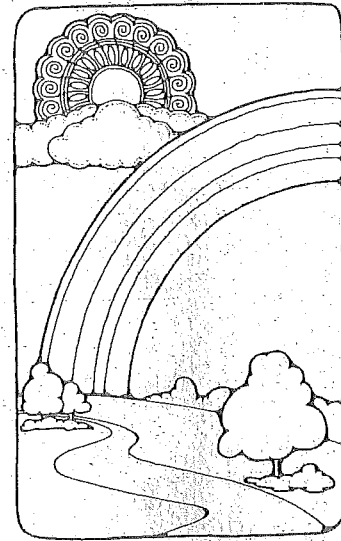


# CONNECTICUT

## AIR QUALITY SUMMARY

1976



Department of Environmental Protection  
Stanley J. Pac, Commissioner

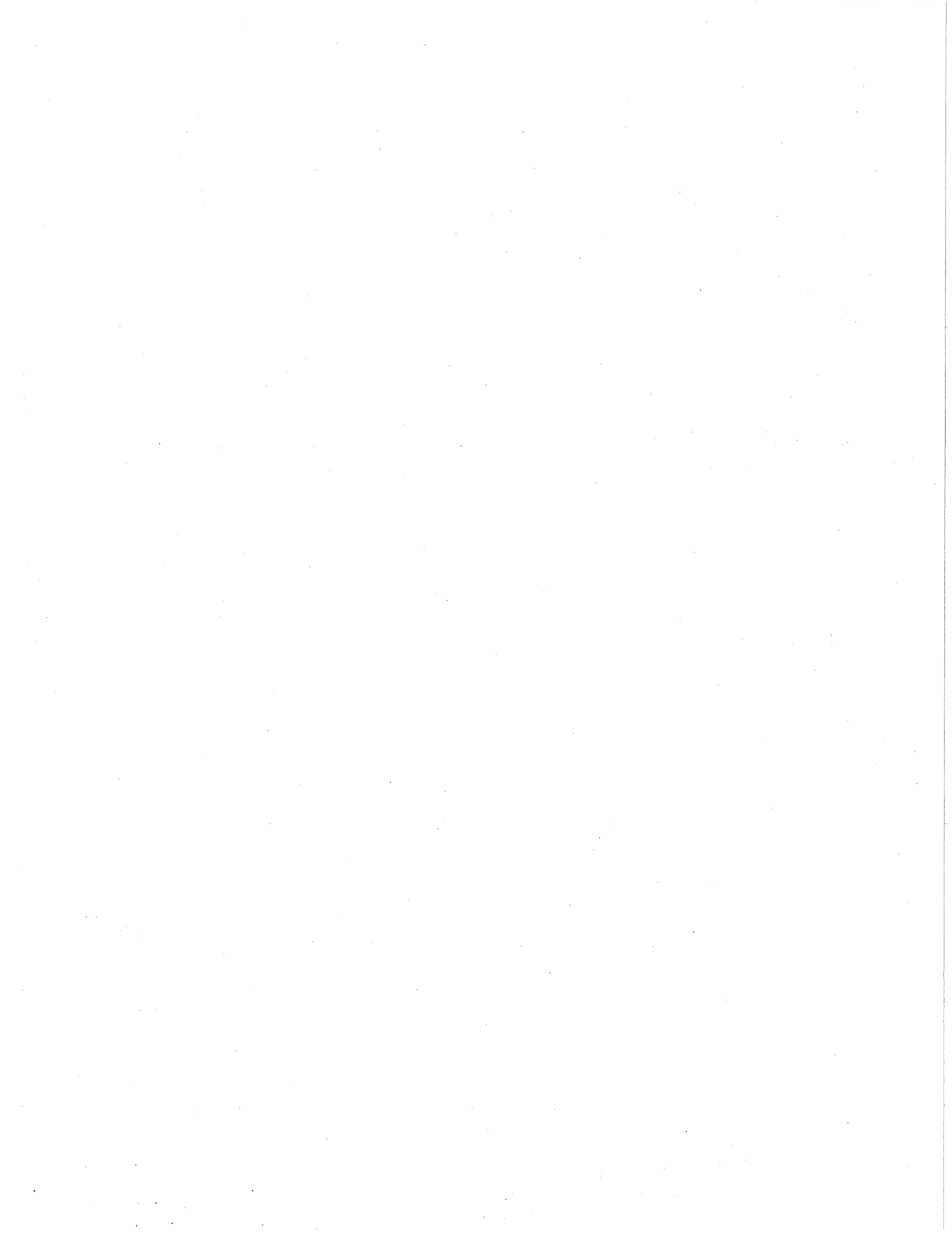


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Cover by  
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CONNECTICUT AIR QUALITY SUMMARY - 1976  
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March, 1977



## I. INTRODUCTION

This summary of 1976 ambient air quality levels in Connecticut is a compilation of all air pollutant measurements made at permanent Department of Environmental Protection (DEP) monitoring sites in the state.

### A. Total Suspended Particulate Matter and Sulfur Dioxide Trends

Figures 1 and 2 show the long-term trends of Set I pollutants (particulate matter and sulfur dioxide) concentrations in Connecticut. In previous Air Quality Summaries data from all the Total Suspended Particulate (TSP) monitoring sites were included in developing the trend chart regardless of whether there were enough data for valid annual geometric means. In this year's summary the trend chart for TSP is based on those sites which had valid annual geometric means. Although this approach reduced the site population size in each year, the frequency distribution of geometric means did not change to any great extent.

The addition of TSP levels in 1976 to the trend chart shows a leveling off of the particulate air quality. It should be noted that the 1976 percentages include the annual geometric means calculated for the eight background TSP sites where 10-vol samplers are in operation (see Special Purpose Monitoring Section).

Figure 2 shows the sulfur dioxide trend. The most significant change between 1975 and 1976 is the increase in the number of sites with valid annual averages. This expansion in the monitoring network is responsible for the apparent improvement in the sulfur dioxide trend from 1975 to 1976. However, it can be seen from the trend chart that there has been a long-term improvement in sulfur dioxide levels. The secondary annual standard was not exceeded at any of the twelve sites in 1976 and only 5 sites have levels between 40 and 60  $\mu\text{g}/\text{m}^3$ .

FIGURE 1

TOTAL SUSPENDED PARTICULATE MATTER TREND

Percent of all sites in each concentration range

- (1) Primary Annual Standard 75  $\mu\text{g}/\text{m}^3$
- (2) Secondary Annual Standard 60  $\mu\text{g}/\text{m}^3$

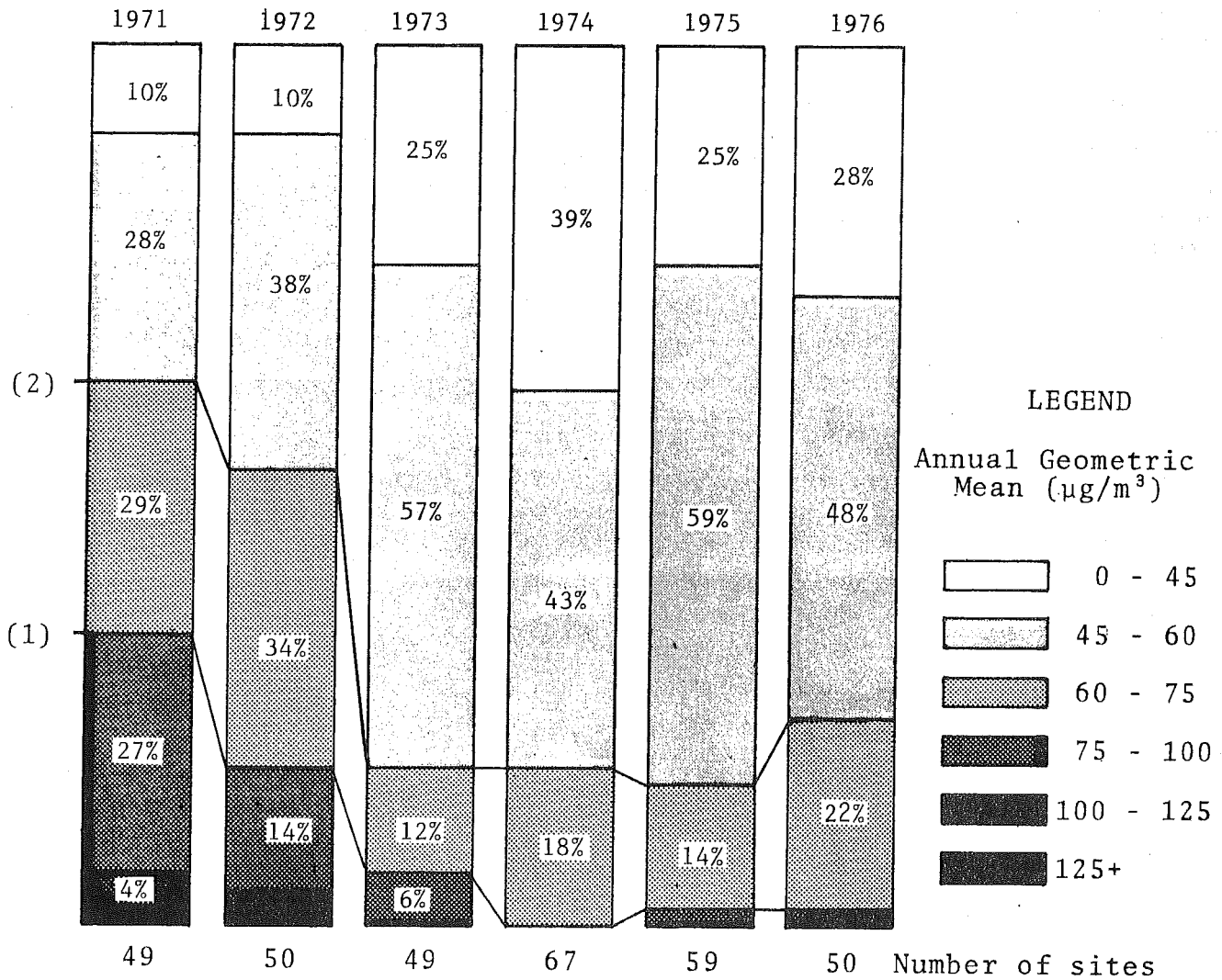
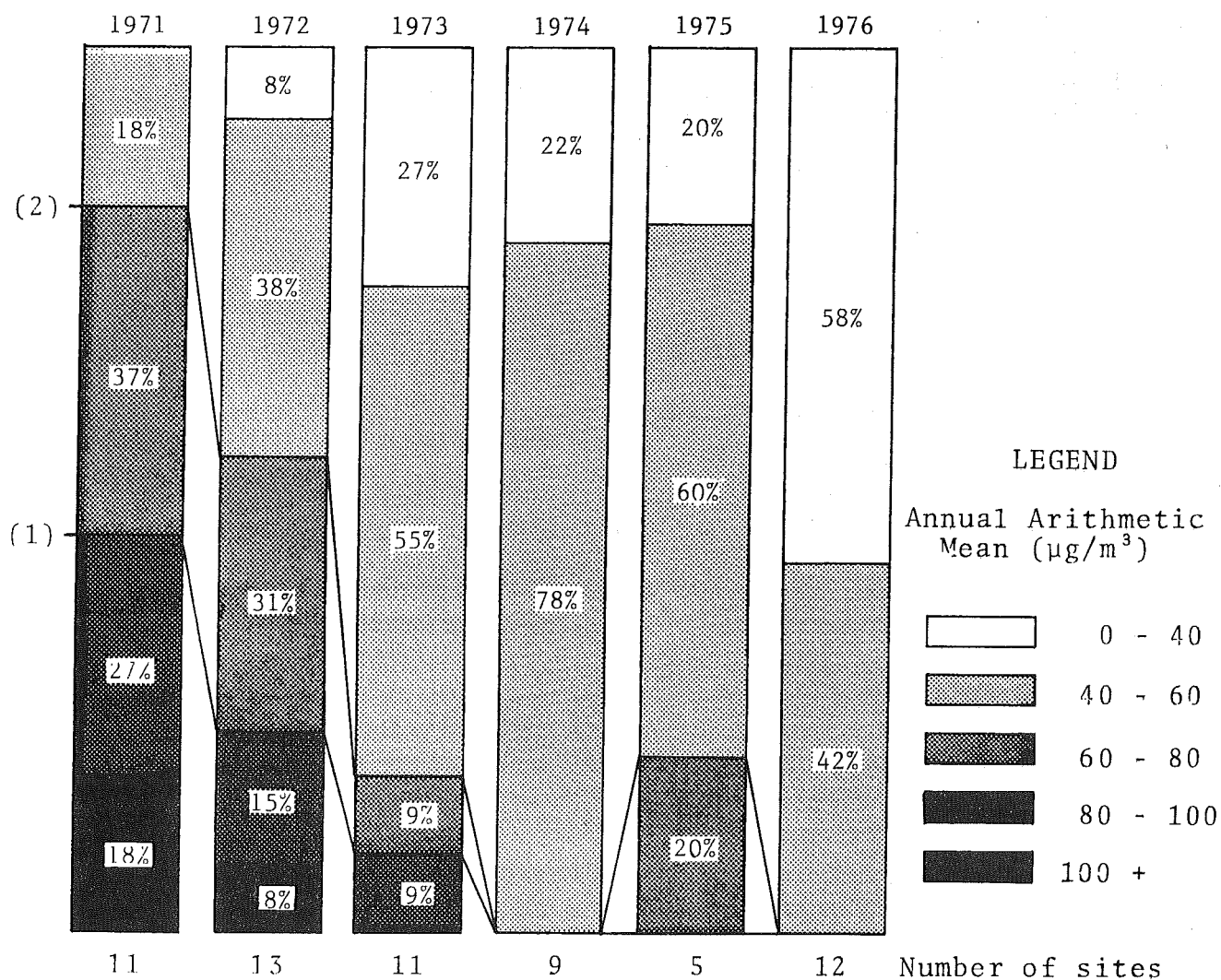


FIGURE 2

SULFUR DIOXIDE TREND

Percent of all sites in each concentration range

(1) Primary Annual Standard  $80 \mu\text{g}/\text{m}^3$   
 (2) Secondary Annual Standard  $60 \mu\text{g}/\text{m}^3$



## B. Air Monitoring Network

A computerized Air Monitoring network consisting of an IBM System 7 computer and 12 telemetered monitoring sites was put into full operation in 1975. Presently, up to 12 measurement parameters from each site are transmitted via telephone lines to the System 7 unit located in the DEP Hartford office. The data are then compiled into 24-hour summaries twice daily. The telemetered sites are located in the towns of Bridgeport, Danbury, Derby, Enfield, Greenwich, Groton, Hartford, New Britain, New Haven, Stamford, and Waterbury. The twelfth telemetered site is scheduled to become operational in 1977 in the town of Middletown.

Measured parameters include the pollutants sulfur dioxide, particulates (COHS), carbon monoxide, ozone, and meteorological data consisting of wind speed and wind direction, wind horizontal sigma, temperature, dew point, precipitation, barometric pressure and solar radiation.

The real-time capabilities of the System 7 telemetry network have enabled the Air Monitoring Unit to report the Air Quality Index for 12 towns on a daily basis while keeping a close watch for high pollution levels which may occur during adverse weather conditions throughout the year.

The complete monitoring network used in 1976 consists of:

- 63 Total Suspended Particulate sites
- 16 Sulfur Dioxide sites
- 12 Ozone sites
- 43 Nitrogen Dioxide sites
- 12 Carbon Monoxide sites

In April, 1976 a major revision to the network was completed which reduced the total number of monitoring sites. A complete description of all permanent air monitoring sites in Connecticut operated by DEP in 1976 is available from the Department of Environmental Protection, Air Compliance, State Office Building, Hartford, Connecticut 06115.

## C. Air Quality Standards

Table 1 lists analysis methods and National Ambient Air Quality Standards (NAAQS) for each pollutant. The NAAQS were established by the U.S. Environmental Protection Agency (EPA) and are divided into two categories: primary, established to protect the public health; and secondary, established to protect plants and animals and to prevent economic damage.

Each standard specifies a concentration and an exposure time developed from studies of the effect of various levels of the different pollutants.



TABLE 1  
ASSESSMENT OF AMBIENT AIR QUALITY

POLLUTANT	METHOD OF ANALYSIS		NATIONAL AMBIENT AIR STANDARDS			
	SAMPLING PERIOD	DATA REDUCTION	STATISTICAL BASE	PRIMARY STANDARD	SECONDARY STANDARD	
				$\mu\text{g}/\text{m}^3$	ppm	$\mu\text{g}/\text{m}^3$
Total Suspended Particulates	24-Hours Every Sixth Day	24-Hour Average	Annual	75	60*	
			Geometric Mean 24-Hour Concentration <sup>2</sup>	260	150	
Sulfur Oxides (Measured as Sulfur Dioxide)	Continuous <sup>1</sup>	1-Hour Average	Annual	80	60 <sup>†</sup>	.02
			Arithmetic Mean 24-Hour Average Concentration <sup>2</sup>	365	260 <sup>†</sup>	.10
			3-Hour Average Concentration <sup>2</sup>		1300	.5
			Arithmetic Mean	100	.05	Same as Primary
Nitrogen Dioxide	24-Hours Every Sixth Day	24-Hour Average	Annual	160	.08	Same as Primary
			1-Hour Average	160**	.24	Same as Primary
Photochemical Oxidants (Ozone)	Continuous <sup>1</sup>	1-Hour Average	8-Hour Average <sup>2</sup>	10	9	Same as Primary
			1-Hour Average	40	35	Same as Primary
Hydrocarbons	Continuous <sup>1</sup>	1-Hour Average	3-Hour Average <sup>2</sup> (6-9 AM)	160**	.24	Same as Primary
			1-Hour Average			
Carbon Monoxide	Continuous <sup>1</sup>	1-Hour Average	8-Hour Average <sup>2</sup>	10	9	Same as Primary
			1-Hour Average	40	35	Same as Primary

<sup>1</sup>EPA assessment criteria requires 75% of possible data to compute valid averages.  
<sup>2</sup>Not to be exceeded more than once per year.

\*A guide to be used in assessing implementation plans to achieve the 24-hour standard.

\*\*For use as a guide in devising implementation plans to achieve oxidant standards.

<sup>†</sup>Secondary Standard applies to State of Connecticut only.

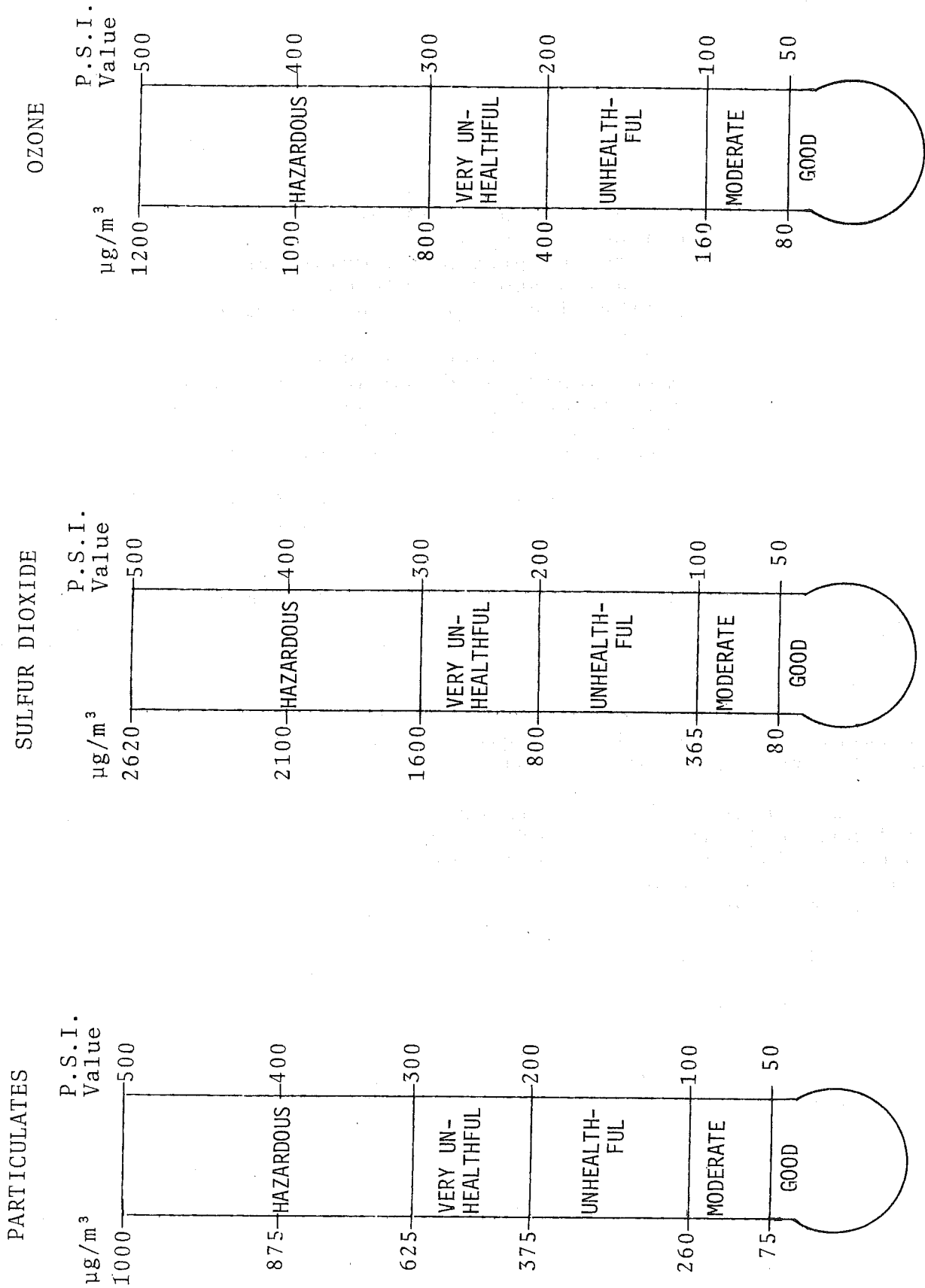
Units:  $\mu\text{g}/\text{m}^3$  = Micrograms per cubic meter; mg/m<sup>3</sup> = Milligrams per cubic meter; ppm = Parts per million

#### D. Pollutant Standards Index

The Pollutant Standards Index (PSI) is a daily air quality index recommended for common use in state and local agencies by the U.S. Environmental Protection Agency. Connecticut switched to reporting the PSI on a 7-day a week basis on November 15, 1976. The PSI incorporates five pollutants - carbon monoxide, sulfur dioxide, total suspended particulates, photochemical oxidants and nitrogen dioxide. The index converts each air pollutant concentration into a normalized number where the National Ambient Air Quality Standard for each pollutant corresponds to PSI = 100 and the Significant Harm Level corresponds to PSI = 500. Figure 3 shows the breakdown of index values for the commonly reported pollutants in Connecticut. Each day the pollutant with the highest PSI value of all the pollutants being monitored is reported, along with the dimensionless PSI number, and a descriptor word to characterize the daily air quality.

This information is available to the public each afternoon from the Connecticut Lung Association in East Hartford, and is transmitted to the news media by the National Weather Service with the afternoon forecast over the news service wires.

FIGURE 3  
 POLLUTANT STANDARDS INDEX



## E. Quality Assurance

A vigorous and comprehensive Quality Assurance Program for air quality data encompasses a multitude of activities:

- Personnel training
- Site selection, evaluation and review
- Equipment evaluation, selection and modification when applicable
- Purchasing and inventory control of consumable supplies
- Instrument preventive maintenance, operation and calibration
- Calibration and traceability of working standards
- Sample collection and analysis
- Data recording, documentation, reduction, validation and reporting
- Interagency cross-checks
- Interlaboratory and instrument audits

The development of the above activities is an ongoing process in which detailed procedures are issued, constantly reviewed, updated and improved.

Data quality is a direct function of the implementation of these activities. In addition, with the advancement of instrument technology, personnel experience and improved quality control procedures for the operation, maintenance and calibration of monitoring equipment, the quality of data should improve from year to year until these advancements are balanced by other factors such as instrument degradation due to aging and personnel turnover (this balance has not yet been reached).

It is essential that data quality be assessed from an impartial source (EPA) that periodically performs quantitative audits on monitoring instruments, calibration systems, and laboratory functions. The results of Connecticut's DEP performance are summarized here in an effort to quantify the degree of data accuracy.

### Particulates:

#### -Sample Weights

The EPA procedure of auditing the weighing of samples is no longer being performed because of a negative bias which exists at each subsequent weighing due to the loss of particulate matter during the sample shipping process.

#### -Flow Rates

The second parameter required to determine particulate concentrations is the sampling flow rate. Connecticut participated in

9 EPA audits, each of which contained 5 different flow rates for a total of 45 data points.

There were 4 data points which were outside the acceptable range defined by EPA, all of which were reported high. However, it should be noted that the unacceptable points were below the normal operating range of hi-vols. All audited values in the range of instrument operation were acceptable.

Sulfur Dioxide:

-Continuous Monitors

Nine instruments were audited by EPA during 1976 for a total of 54 data points. Performing a linear regression analysis on all these data points (CT vs EPA), produced a linear relationship of  $Y = 1.002 X + 0.0048$  where  $Y =$  Connecticut's values and  $X =$  EPA's. The 95% confidence band for concentrations between 0 and 0.3 ppm was essentially constant and amounted to  $\pm 0.038$  ppm. Put another way, any values between 0 and .3 ppm, probably deviated by a factor of no more than  $-0.0332$  to  $+0.0428$  ppm.

At the end of the year, a comparison was made between our primary calibration standard, 2 field calibration units and EPA, Region I's field calibrator. All results were within 5.5% of one another, well within the range of acceptability.

Ozone:

Instruments at 8 sites were audited by EPA during 1976 for a total of 46 data points. Performing a linear regression analysis on all these data points (CT vs EPA), produced a linear relationship of  $Y = 1.012 X - .0001$  where  $Y =$  Connecticut's value and  $X =$  EPA's. The 95% confidence band for concentrations between 0 and 0.4 ppm was essentially constant and amounted to  $\pm 0.029$  ppm. Put another way, any value between 0 and 0.4 ppm, probably deviated by a factor of no more than  $-0.029$  to  $+0.029$  ppm, indicating excellent performance of the instruments and calibrations.

Nitrogen Dioxide:

-Bubblers

Fifteen EPA reagent samples were analyzed at the Environmental Chemistry Laboratory of the Connecticut Health Department to determine the accuracy of the analytical procedures. Two values were barely outside EPA's acceptable range and were 4.3% below and 6.1% above the mean expected values.

## Carbon Monoxide:

Eight monitors were audited in 1976 per EPA's procedures (DEP personnel sample from 3 tanks of CO in nitrogen, where the CO concentration of each tank was unknown to them). Results indicate that at the upper end of the instruments' range (38.8 ppm input), the average reading was 0.5 ppm high with a standard deviation of 2.7 ppm. At midrange (18 ppm input) the average difference was 0.2 ppm with a standard deviation of 1.9 ppm. At the low end (7 ppm input), the average difference was -0.1 ppm  $\pm$ 1.3 ppm.

In the future, audits will be performed by EPA personnel, in conjunction with SO<sub>2</sub> and O<sub>3</sub> audits.

## II. TOTAL SUSPENDED PARTICULATES

### Conclusions:

In general, measured total suspended particulate (TSP) levels in Connecticut showed no significant change in air quality in 1976 as compared to 1975 (see Figure 1).

In 1976, 16 sites showed lower annual geometric means than in 1975, with 7 of these decreases being greater than  $5 \mu\text{g}/\text{m}^3$ . The geometric means at 18 sites showed increases in 1976 over 1975, 6 of which increased more than  $5 \mu\text{g}/\text{m}^3$ . When determining compliance with either the primary or secondary annual NAAQS for TSP the federal EPA recommends that only sites with at least 5 observations in each quarter of the year be evaluated. Using this criterion the primary annual standard was exceeded in Waterbury at site 123 while the secondary annual standard was exceeded at 12 sites in 1976, 5 more than in 1975 (many by a very slight margin).

Table 4 presents 1st and 2nd high 24-hour concentrations recorded at each site. There was no violation of the primary 24-hour standard recorded in 1976. Measured values exceeding the secondary 24-hour standard were recorded at 12 sites in 1976, 2 less than in 1975.

### Discussion of Data:

Table 3 is the product of a computer program listing all monitoring sites used by the DEP. The data for each site includes the number of samples taken (generally, a maximum of 61 samples per year), the geometric mean, 95% confidence limits about the mean, the standard geometric deviation and statistical prediction of the number of days in each year the 24-hour primary and secondary NAAQS would have been exceeded if sampling had been conducted every day. This analysis, as were the national ambient standards, is based on the assumption that the particulate data are lognormally distributed.

Because manpower and economic limitations dictate that sampling of particulate matter occurs once every sixth day instead of every day, a degree of uncertainty as to whether the air quality at a site has either met or exceeded the national standards is introduced. This uncertainty can be quantified by determining 95% confidence limits about each of the annual geometric means. For example, (see Table 3), in Ansonia at site 003 in 1976, 61 samples were taken and a geometric mean of  $59.8 \mu\text{g}/\text{m}^3$  was calculated. However, the columns labeled "95-PCT-LIMITS" show the lower and upper limits for a 95% confidence interval of 53 and  $68 \mu\text{g}/\text{m}^3$ , respectively. This means that if any other set of 61 samples were taken in 1976 at this site there is a 95% chance the geometric means would fall between these limits. Since the national secondary standard for particulates is within this interval, one cannot be 95% confident that the secondary standard was met in 1976.

In Table 2 all 1976 monitoring sites are examined for compliance with the standard using the statistical confidence limit criteria. The table shows that Waterbury 123 exceeded the primary annual standard with 95% confidence. It is uncertain whether the standard was either achieved or exceeded at 3 other sites. The table also shows that the secondary standard was exceeded with 95% confidence at 3 sites. Whether the secondary standard was exceeded is uncertain at 23 other sites. Comparing this to the results using the actual measured levels in the conclusions above, the 95% confidence method includes the same number of sites exceeding the primary standard and 9 less sites exceeding the secondary standard.

Table 4 presents the second high 24-hour concentrations recorded at each site. Although no violations of the primary 24-hour standard were measured, the statistical projections from Table III indicate that 3 sites having valid geometric means would have violated the standard had samples been collected every day. Violations of the secondary 24-hour standard were measured at 12 sites in 1976 but again, if samples were collected every day, statistical projections indicate that 24 additional sites would have recorded violations of the secondary standard.

#### Further TSP Work:

In 1977 the Air Monitoring Section will operate high volume samplers every third day at four locations. See also the Special Purpose Monitoring section of this report for discussion of Lo-Vol TSP sampling.

#### Sample Collection and Analysis:

Total suspended particulate levels are obtained from High Volume Samplers. These "Hi-Vols" resemble vacuum cleaners in their operation, with an 8" x 10" piece of fiberglass filter paper replacing the vacuum bag. The samplers operate every sixth day from midnight to midnight.

The matter collected on the filters is analyzed for weight and chemical composition. The flow through the filter is measured before and after sampling and the volume of air which has passed through the filter in 24 hours is calculated. The weight in micrograms ( $\mu\text{g}$ ) divided by the volume of air in cubic meters ( $\text{m}^3$ ) yields the pollutant concentration for the day, in micrograms per cubic meter. The chemical composition of the suspended particulate matter is determined as follows. A standardized strip of each of the Hi-Vol filters collected in each quarter year is cut-out and composited into one sample. This procedure is repeated three times so that for each site, three quarterly composited samples are made. One sample is digested in benzene and the residue is weighed. The weight of this residue represents the organic material in the sample and the result is reported as the benzene soluble fraction of the TSP in  $\mu\text{g}/\text{m}^3$ . Another sample is dissolved in water, re-fluxed and the resulting solution



is analyzed to determine the water soluble fraction of the TSP using wet chemistry techniques. Results are reported for each individual constituent of the water soluble fraction in  $\mu\text{g}/\text{m}^3$ . The last composited sample is digested in acid and the resulting solution is analyzed for the different metals in the TSP using an atomic absorption spectrophotometer. Results are reported for each individual metal in  $\mu\text{g}/\text{m}^3$ .

TABLE 2

CONFIDENCE OF TSP ANNUAL GEOMETRIC MEANS

<u>Primary Standard</u>		<u>Secondary Standard</u>	
95% Confident Standard Has Been Exceeded (>75)	Uncertain Whether Standard Has Been Achieved Or Exceeded	95% Confident Standard Has Been Exceeded (>60)	Uncertain Whether Standard Has Been Achieved Or Exceeded
Waterbury 123	Bridgeport 123 Hartford 003 Torrington 123	Bridgeport 123 Hartford 003 Waterbury 123	Ansonia 003 Bridgeport 001 Bristol 001 Bristol 004 Derby 123 Greenwich 001 Greenwich 003 Greenwich 008 Meriden 005 Middletown 003 Naugatuck 001 New Britain 003 New Britain 123 New Haven 001 New Haven 002 Norwalk 005 Old Saybrook 001 Stamford 003/123 Stamford 007 Stratford 005 Torrington 123 Wallingford 001 Waterbury 002

TABLE 3

## CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAGE 1

AIR COMPLIANCE MONITORING

## POLLUTANT--PARTICULATES

DISTRIBUTION--LOGNORMAL

TCWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS		STD GEOM DEV	PREDICTED DAYS OVER 150 UG/M3	PREDICTED DAYS OVER 260 UG/M3
					LOWER	UPPER			
ANSONIA	03	1976	61	59.8	53	68	1.715	16	1
BERLIN	01	1976	13	38.0	29	49	1.538		
BRIDGEPORT	01	1976	61	54.3	49	61	1.595	5	
BRIDGEPORT	123	1976	60	68.4	61	77	1.638	20	1
BRISTOL	01	1976	52	58.8	51	68	1.743	16	1
BRISTOL	04	1976	49	60.5	53	69	1.658	13	1
BURLINGTON	01	1976	7	24.3	14	41	1.791		
DANBURY	123	1976	60	53.0	47	60	1.671	8	
DERBY	123	1976	58	53.9	48	61	1.634	7	
EAST HARTFORD	01	1976	11	35.4	21	60	2.212	13	2
EAST HARTFORD	02	1976	53	41.2	36	47	1.680	2	
EAST WINDSOR	01	1976	13	69.0	54	88	1.512	10	
ENFIELD	123	1976	56	43.2	38	49	1.638	2	
GREENWICH	01	1976	58	54.4	49	61	1.567	4	
GREENWICH	02	1976	16	54.6	44	68	1.502	2	
GREENWICH	03	1976	54	55.8	50	63	1.580	5	
GREENWICH	04	1976	57	40.3	35	46	1.755	4	

PCLLUTANT--PARTICULATES

DISTRIBUTION--LGGNORMAL

PREDICTED DAYS OVER 150 UG/M3  
 PREDICTED DAYS OVER 260 UG/M3

95-PCT-LIMITS

STD GEOM DEV

LOWER UPPER

GEOM MEAN

SAMPLES

SITE YEAR

TOWN NAME

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	STD GEOM DEV	PREDICTED DAYS OVER 150 UG/M3	PREDICTED DAYS OVER 260 UG/M3
GREENWICH	03	1976	57	55.2	49	62	1.668	8	
GRCTON	123	1976	58	44.7	41	49	1.506		
HADDAM	02	1976	58	35.4	31	40	1.641	1	
HARTFORD	02	1976	59	43.5	43	54	1.619	4	
HARTFCRD	03	1976	58	73.5	67	81	1.496	13	
HARTFORD	04	1976	13	53.6	44	78	1.624	10	
HARTFCRD	05	1976	12	55.8	44	71	1.481	2	
HARTFCRD	123	1976	19	47.7	40	57	1.455		
MANCHESTER	01	1976	55	39.8	35	45	1.604	1	
MANSFIELD	01	1976	14	40.5	31	54	1.646	2	
MERIDEN	02	1976	51	51.8	46	58	1.560	3	
MERIDEN	05	1976	60	62.5	54	73	1.917	35	5
MIDDLETOWN	03	1976	60	58.4	52	65	1.591	8	
MILFORD	01	1976	60	50.6	45	56	1.566	3	
MILFORD	02	1976	58	52.2	47	58	1.538	2	
MORRIS	01	1976	12	35.0	25	50	1.753	2	
NAUGATUCK	01	1976	60	54.6	48	62	1.685	10	
NEW BRITAIN	03	1976	57	64.7	57	73	1.688	20	1

## CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAGE 3

AIR COMPLIANCE MONITORING

## POLLUTANT--PARTICULATES

DISTRIBUTION--LGGNORMAL

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS		STD GEOM DEV	PREDICTED DAYS OVER 150 UG/M3	PREDICTED DAYS OVER 260 UG/M3
					LOWER	UPPER			
NEW BRITAIN	04	1976	13	48.7	37	64	1.575	2	
NEW BRITAIN	123	1976	61	56.7	51	63	1.607	7	
NEW HAVEN	01	1976	58	58.0	51	66	1.699	13	1
NEW HAVEN	02	1976	58	60.3	54	67	1.551	7	
NEW HAVEN	03	1976	15	49.2	41	59	1.396		
NEW HAVEN	05	1976	19	53.3	41	69	1.760	13	1
NORTH CANAAN	01	1976	59	39.6	34	46	1.794	4	
NORWALK	01	1976	10	68.3	52	90	1.470	8	
NORWALK	05	1976	59	58.7	52	66	1.620	10	
NORWICH	01	1976	59	49.6	45	55	1.489	1	
CLD SAYBROOK	01	1976	58	63.8	57	71	1.569	10	
PUTNAM	02	1976	16	63.5	47	86	1.773	24	2
STAMFORD	01	1976	11	68.9	50	94	1.609	20	1
STAMFORD	04	1976	11	45.9	34	61	1.545	1	
STAMFORD	07	1976	58	57.5	51	64	1.577	7	
STAMFORD 03/	123	1976	61	60.6	55	67	1.538	7	
STRATFORD	01	1976	47	47.2	42	54	1.595	2	
STRATFORD	05	1976	60	60.0	54	67	1.567	8	

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS		STD GEOM DEV	PREDICTED	
					LOWER	UPPER		DAYS OVER 150 UG/M3	DAYS OVER 260 UG/M3
TORRINGTON	123	1976	57	67.7	59	77	1.702	24	2
VOLUNTTOWN	01	1976	12	22.7	18	29	1.497		
WALLINGFORD	01	1976	60	58.4	52	65	1.608	8	
WATERBURY	02	1976	60	60.1	54	67	1.625	10	
WATERBURY	03	1976	13	65.0	47	89	1.711	20	2
WATERBURY	123	1976	60	86.5	76	98	1.689	58	7
WATERFORD	01	1976	57	34.3	30	39	1.633		
WILLIMANTIC	01	1976	13	54.7	45	66	1.377		
WINCHESTER	01	1976	13	68.7	47	100	1.886	42	7

TABLE 4  
 Total Suspended Particulates  
 1976 - Connecticut  
 24-Hour Concentration

Site	High	Date		(micrograms per cubic meter)					
		High	0	100	150	200	260	300	400
Ansonia 003	2/24			-----197----					
		1/7		-----174----					
Berlin 001	1/13			--66-- (3 months)					
Bridgeport 001	4/18			-----159----					
		6/11		-----154----					
Bridgeport 123	6/17			-----195----					
		2/25		-----191----					
Bristol 001	9/15			-----200--					
		8/28		-----144----					
Bristol 004	4/18			-----150----					
		5/24		-----133----					
Burlington 001	3/25			--55-- (3 months)					
Danbury 123	6/11			-----163----					
		2/24		-----127----					
Derby 123	6/11			-----153----					
		3/25		-----138----					
E. Hartford 001	3/1			---93--- (3 months)					
E. Hartford 002	6/11			-----150----					
		4/18		-----104----					
E. Windsor 001	2/24			-----144---- (3 months)					
Enfield 123	12/20			-----143----					
		6/11		-----128----					
Greenwich 001	6/11			-----151----					
		4/18		-----136----					
Greenwich 002	3/19			----108---- (3 months)					

SECONDARY      PRIMARY

Site	High	Date		(micrograms per cubic meter)						
		High	2nd High	0	100	150	200	260	300	400
Greenwich	003	3/25			-----126----					
			5/6		-----121----					
Greenwich	004	3/25			-----145----					
			6/11		-----137----					
Greenwich	008	6/11			-----177----					
			4/19		-----166----					
Groton	123	4/18			-----105----					
			6/11		-----96----					
Haddam	002	6/11			-----128----					
			12/20		-----109--					
Hartford	002	6/11			-----140----					
			2/25		-----125----					
Hartford	003	6/11			-----190----					
			1/13		-----161----					
Hartford	004	2/24			-----121----					
					(3 months)					
Hartford	005	2/24			-----98----					
					(3 months)					
Hartford	123	11/26			-----100--					
					(3 months)					
Morris	001	2/24			-----107----					
					(3 months)					
Manchester	001	6/11			-----139----					
			3/25		-----96----					
Mansfield	001	2/24			-----86----					
					(3 months)					
Meriden	002	6/11			-----143----					
			1/13		-----117----					
Meriden	005	3/31			-----438-----					
			6/11		-----185----					

SECONDARY PRIMARY



Site		Date		0 100 150 200 260 300 400				
		High	2nd High	(micrograms per cubic meter)				
Middletown	003	6/11		-----161----				
			4/18	-----124----				
Milford	001	6/11		-----151----				
			4/18	-----125----				
Milford	002	6/11		-----136----				
			4/18	-----134----				
Naugatuck	001	3/19		-----142----				
			6/11	-----135----				
New Britain	003	6/11		-----214----				
			9/15	-----163----				
New Britain	004	1/13		----100----				
				(3 months)				
New Britain	123	2/25		-----149----				
			6/11	-----140----				
New Haven	001	6/11		-----248----				
			8/28	-----151----				
New Haven	002	6/11		-----167----				
			4/18	-----132----				
New Haven	003	2/24		--80----				
				(3 months)				
New Haven	005	1/13		-----160----				
				(4 months)				
N. Canaan	001	6/11		-----186----				
			12/14	----103----				
Norwalk	001	2/24		-----138----				
				(3 months)				
Norwalk	005	6/11		-----147----				
			1/7	-----144----				
Norwich	001	6/11		-----150----				
			1/7	-----128----				
Old Saybrook	001	6/11		-----178----				
			2/24	-----163----				

SECONDARY PRIMARY

Site	High	Date		(micrograms per cubic meter)						
		High	2nd High	0	100	150	200	260	300	400
Putnam	002	3/19			159					
					(3 months)					
Stamford	001	2/24			131					
					(3 months)					
Stamford	003	4/18			138					
					(5 months)					
Stamford	004	1/7			88					
					(3 months)					
Stamford	007	12/8			144					
			6/11		139					
Stamford	123	12/20			142					
			11/26		115					
Stratford	001	7/17			140					
			4/18		134					
Stratford	005	4/18			135					
			2/24		134					
Torrington	123	3/25			222					
			3/19		177					
Voluntown	001	3/19			46					
					(3 months)					
Wallingford	001	2/24			169					
			3/19		158					
Waterbury	002	6/11			159					
			9/15		135					
Waterbury	003	2/24			175					
					(3 months)					
Waterbury	123	2/26			281					
			3/25		256					
Waterford	001	6/11			155					
			4/18		92					
Willimantic	001	3/19			85					
					(3 months)					
Winchester	001	2/24			137					
					(3 months)					

SECONDARY      PRIMARY



### III. SULFUR DIOXIDE

#### Conclusions:

At no monitoring site in Connecticut was the primary or secondary annual sulfur dioxide (SO<sub>2</sub>) standard exceeded in 1976.

The primary 24-hour ambient standard for SO<sub>2</sub> was not exceeded in Connecticut during 1976. Milford 002 recorded a violation of the secondary 24-hour ambient standard for SO<sub>2</sub>.

There was no violation of the 3-hour SO<sub>2</sub> standard recorded at monitoring sites in Connecticut in 1976.

#### Discussion of Data:

A total of 16 continuous SO<sub>2</sub> monitors recorded data in 14 towns during 1976. Eleven of these sites telemetered the data to the central computer in Hartford on a real-time basis. Sufficient data for valid annual means were recorded at 12 of these 16 sites in the network, up from 5 in 1975.

#### Method of Measurement:

The Air Monitoring Unit uses several types of instruments to continuously measure sulfur dioxide levels. The coulometric method is employed by Philips instruments, the flame photometric method by Bendix instruments.

Philips monitoring instruments were used at the following sites in 1976:

Bridgeport 001	Milford 002
Meriden 002	New Haven 004
Middletown 003	

Bendix instruments were used at the following sites in 1976:

Bridgeport 123	Hartford 123
Danbury 123	New Britain 123
Derby 123	New Haven 123
Enfield 123	Stamford 123
Greenwich 004	Waterbury 123
Groton 123	

Connecticut also used modified West-Gaeke sulfur dioxide bubblers at 26 sites, however, the Department regards all SO<sub>2</sub> bubbler data to date as invalid due to problems associated with the collection, storage and transport of bubbler samples (see section on Special Studies for further discussion of bubbler data.)

TABLE 5  
ANNUAL ARITHMETIC AVERAGES OF SULFUR DIOXIDE  
AT SITES WITH CONTINUOUS MONITORS

Primary NAAQS 80  $\mu\text{g}/\text{m}^3$

Town	Site Name	1976	1975	1974	1973	1972	1971
Bridgeport	001 City Hall	47	63	42	44	62	76
Bridgeport	002 Fairfield Avenue Fire House	--	--	51	31	54	--
Bridgeport	003 McKinley School	--	47	49	50	50	--
Bridgeport	123 Hallett Street	50	-- <sup>1</sup>	--	--	--	--
Danbury	123 Western Conn. State College	37	31	-- <sup>1</sup>	--	--	--
Derby	123 Dziadik Street	37	-- <sup>1</sup>	--	--	--	--
Enfield	123 Kosciuszko Junior H.S.	26	(42) <sup>2</sup>	--	--	--	--
Greenwich	001 Town Hall Annex	--	--	37	53	45	62
Greenwich	004 Bruce Golf Course	26	-- <sup>1</sup>	(29) <sup>2</sup>	29	33	43
Greenwich	008 Cos Cob Pumping Station	--	--	48	55	43	71
Groton	123 Fort Griswold State Park	29	(29) <sup>3</sup>	--	--	--	--
Hartford	003 Public Library	--	--	48	69	61	91
Hartford	123 State Office Building	42	-- <sup>1</sup>	--	--	--	--
Meriden	002 Stoddard Building	(42) <sup>2</sup>	--	--	--	--	--
Middletown	003 City Hall	-- <sup>1</sup>	--	--	--	--	--
Milford	002 Devon Community Center	(68) <sup>2</sup>	50	31	(25) <sup>2</sup>	--	--
New Britain	002 City Hall	--	-- <sup>1</sup>	--	(80) <sup>3</sup>	120	96
New Britain	123 Lake Street	31	-- <sup>1</sup>	--	--	--	--
New Haven	004 Community Service Building	-- <sup>1</sup>	50	40	54	79	84
New Haven	008 Agricultural Station	--	--	--	38	41	51
New Haven	123 State Street	50	-- <sup>1</sup>	--	--	--	--
Norwalk	005 Health Department	--	--	44	50	62	65
Stamford	123 Health Department	45	(50) <sup>2</sup>	-- <sup>1</sup>	(78) <sup>2</sup>	90	119
Torrington	123 Franklin Avenue	--	-- <sup>1</sup>	--	--	--	--
Waterbury	001 City Hall	--	--	(56) <sup>4</sup>	84	93	103
Waterbury	123 Bank Street	31	-- <sup>1</sup>	--	--	--	--

<sup>1</sup>Insufficient data for valid annual average or estimate (less than 6 months)

<sup>2</sup>Estimate based on partial data (6 to 9 months)

<sup>3</sup>Based upon questionable data

<sup>4</sup>September - December data missing

TABLE 6  
Sulfur Dioxide  
1976 - Connecticut  
24-Hour Concentration

Site	High	Date		(micrograms per cubic meter)						
		High	2nd High	0	100	200	260	300	365	400
Bridgeport 001	2/4				-----213-----					
			1/21		-----200-----					
Bridgeport 123	1/21				-----248-----					
			2/4		-----211-----					
Danbury 123	1/21				-----157-----					
			2/26		-----118--					
Derby 123	9/11				-----167---					
			9/12		-----141---					
Enfield 123	1/11				---71--					
			12/26		---71--					
Greenwich 004	1/21				-----200-----					
			1/10		-----119-----					
Groton 123	2/4				---100---					
			12/24		---87---					
Hartford 123	1/11				-----187-----					
			4/13		-----152-----					
Meriden 002	2/4				-----159-----					
			1/21		-----122-----					
Middletown 003	6/16			---67--						
				(2 months)						
Milford 002	11/16				-----309-----					
			6/14		-----299-----					
New Britain 123	11/18				-----129--					
			12/5		-----113--					
New Haven 004	2/4			-----190-----						
				(2 months)						
New Haven 123	1/11				-----236-----					
			1/21		-----231-----					
Stamford 123	1/8				-----203-----					
			1/21		-----202-----					
Waterbury 123	1/7				-----136-----					
			1/21		-----114---					

SECONDARY    PRIMARY

TABLE 7  
 SULFUR DIOXIDE  
 1976 - CONNECTICUT  
 3-HOUR CONCENTRATION

Site	Date	0	100	200	300	400	500	600
Bridgeport 001	2/4				445			
Bridgeport 123	1/21			398				
Danbury 123	5/14			275				
Derby 123	1/21		187					
Enfield 123	1/13		157					
Greenwich 004	1/21			303				
Groton 123	2/25		167					
Hartford 123	1/13			253				
Meriden 002	2/4			227				
Middletown 003	7/22		100					
Milford 002	11/15				550			
New Britain 123	1/13			253				
New Haven 004	2/4				358			
New Haven 123	2/4			314				
Stamford 123	2/10			277				
Waterbury 123	1/21			218				





## IV. OZONE

### Conclusions:

As in past years, Connecticut experienced very high concentrations of photochemical oxidants (measured as ozone) in the summer months of 1976. At each of the twelve monitoring sites, levels in excess of the NAAQS of 0.08 ppm were frequently recorded, with one-hour average concentrations occasionally exceeding 0.2 ppm.

### Discussion of Data:

Tables 8 & 9, which are summary comparisons of 1976, 1975, and 1974 ozone data, indicate no discernible downward trend in ambient oxidant concentrations. In fact, at many sites, 1976 second highs and frequencies exceeded those in 1975.

In order to gather information which will further the understanding of production and transport, as well as to provide real-time data for the daily Pollutant Standards Index, DEP operated in 1976 a state-wide ozone monitoring network consisting of four types of sites:

Urban: Bridgeport, Derby, Hartford, Middletown, New Haven  
Advection from southwest: Danbury, Greenwich  
Suburban: Enfield, Groton  
Rural: Eastford, Hamden, Morris

### Method of Measurement:

The Air Compliance Unit uses chemiluminescent instruments to measure levels of ozone which is the major constituent of photochemical oxidants in this area. These instruments measure and record instantaneous concentrations of ozone continuously by means of a fluorescent technique. Properly calibrated, these instruments have been shown to be remarkably reliable and stable.

TABLE 8  
 APRIL TO SEPTEMBER OZONE SUMMARY THREE YEAR TREND

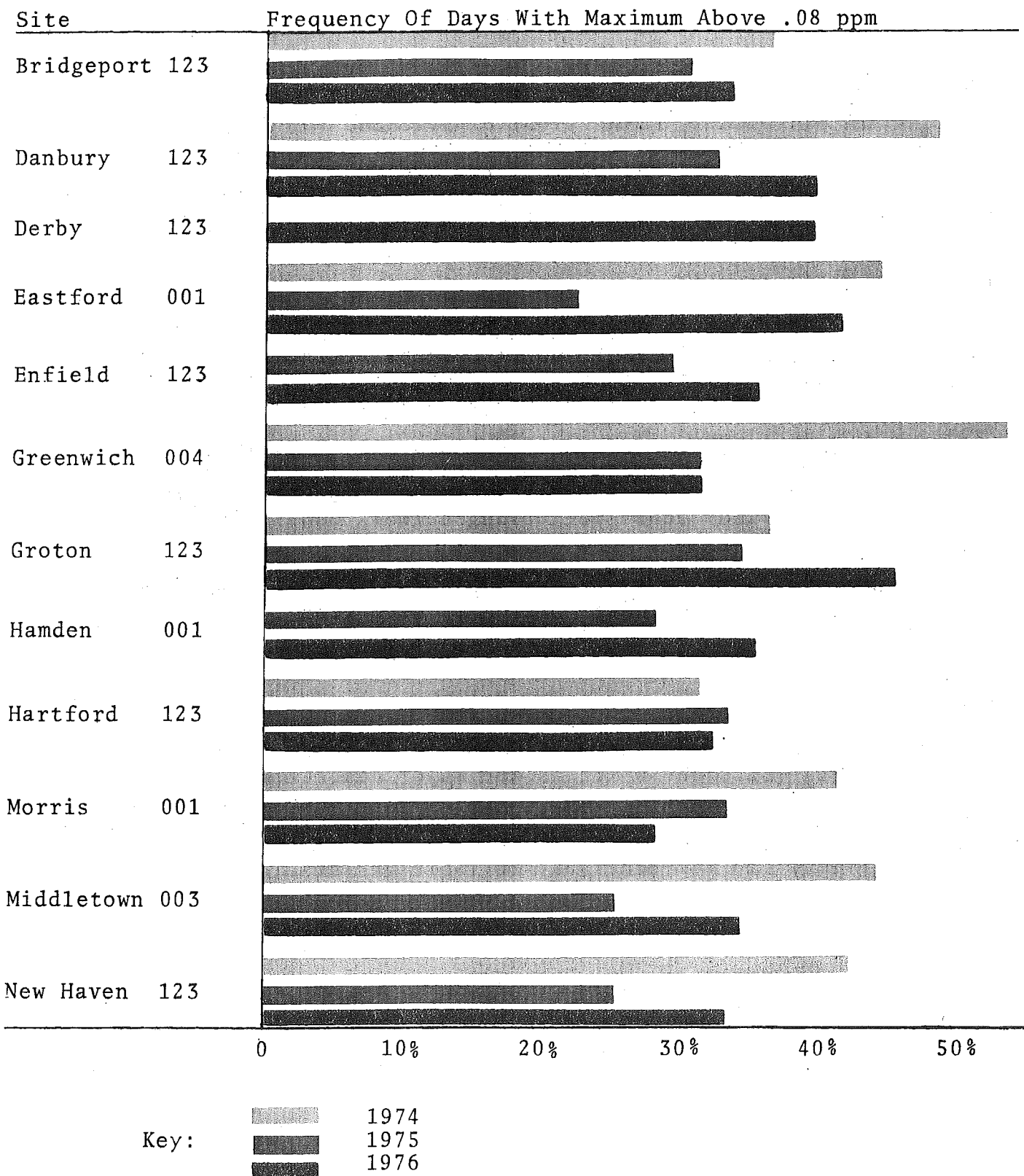


TABLE 9  
OZONE  
THREE YEAR TREND

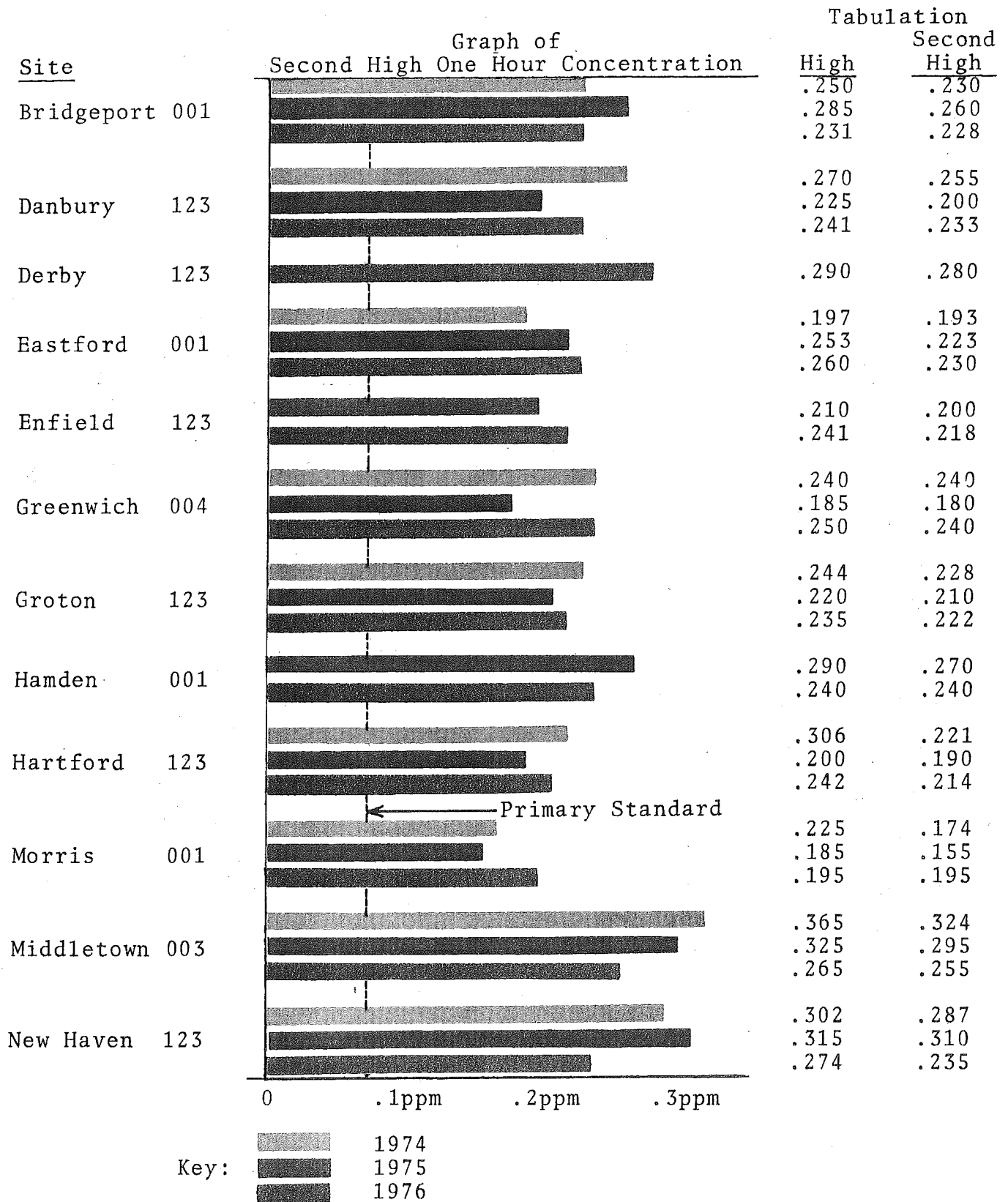


Table 10  
1976 Ozone

		Number of days with 1-hour >.08 ppm					Total	
		April	May	June	July	August	Sept	
Bridgeport	123	5	3	11	17	15	9	60
Danbury	123	6	10	16	13	11	2	58
Derby	123	6	7	17	19	17	7	73
Eastford	001	9	9	15	17	16	9	75
Enfield	123	7	11	14	9	15	7	63
Greenwich	004	5	4	13	17	11	6	56
Groton	123	9	11	14	21	17	10	82
Hamden	001	7	8	18	16	2	4	55
Hartford	123	5	9	13	12	13	8	60
Morris	001	6	8	13	12	6	8	53
Middletown	003	3	7	13	13	13	9	58
New Haven	123	5	8	13	15	14	5	60

TABLE 11  
1976 OZONE

	Maximum 1-hour concentration (ppm)							High	Date	2nd High	Date
	A	M	J	J	A	S	S				
Bridgeport 123	.199	.123	.225	.194	.231	.220	.231	8/12/14	.228	8/13/14	
Danbury 123	.233	.137	.206	.183	.241	.127	.241	8/13/16	.233	4/19/15	
Derby 123	.210	.128	.280	.220	.290	.177	.290	8/12/15	.280	6/24/15	
Eastford 001	.190	.130	.215	.230	.260	.145	.260	8/12/18	.230	7/20/16	
Enfield 123	.241	.135	.202	.215	.190	.155	.241	4/19/16	.218	4/19/15	
Greenwich 004	.148	.128	.250	.176	.224	.160	.250	6/08/15	.240	6/28/14	
Groton 123	.134	.110	.235	.222	.167	.180	.235	6/11/15	.222	7/20/14	
Haddam 001	.217	.140	.240	.240	.120	.120	.240	6/24/16	.240	7/20/14	
Hartford 123	.214	.114	.209	.242	.214	.165	.242	7/20/16	.214	4/19/15	
Morris 001	.195	.125	.170	.153	.195	.145	.195	4/19/16	.195	8/05/16	
Middletown 003	.125	.117	.255	.240	.265	.138	.265	8/12/16	.255	6/24/16	
New Haven 123	.159	.107	.274	.202	.235	.143	.274	6/24/15	.235	8/12/15	

Date is read as: month/day/hour of occurrence



## V. NITROGEN DIOXIDE

### Conclusions:

Nitrogen dioxide levels at all sampling sites in Connecticut were lower than the National Ambient Air Quality Standard of 100  $\mu\text{g}/\text{m}^3$ , annual arithmetic mean.

### Discussion of Data:

There were 43 nitrogen dioxide sites in 1976 as compared to 41 in 1975. The sites are distributed in a network which covers urban, residential and suburban locations.

The nitrogen dioxide data is presented in Table 12. The format is the same used to list the total suspended particulate data. Note that although the distribution of  $\text{NO}_2$  data is lognormal, the annual arithmetic mean is shown for direct comparison to the NAAQS for nitrogen dioxide. The 95 percent limits and standard deviation are also arithmetic calculations, but the geometric means and standard deviations were used to give accurate predictions of the number of days the levels of 100  $\mu\text{g}/\text{m}^3$  and 282  $\mu\text{g}/\text{m}^3$  would be exceeded at each site if sampling had been conducted on a daily basis. Although there is no 24-hour NAAQS for  $\text{NO}_2$ , the 282  $\mu\text{g}/\text{m}^3$  level was selected because at this level a 2nd stage air pollution alert is to be declared according to the State of Connecticut's Administrative Regulations for the Abatement of Air Pollution, while the 100  $\mu\text{g}/\text{m}^3$  level was selected as an indication of how many days per year the annual NAAQS may have been exceeded if sampling was performed daily.

### Sample Collection and Analysis:

The Air Monitoring Unit uses gas bubblers employing the NASN Sodium Arsenite method. These instruments sample for twenty-four hours every sixth day, the same schedule as the suspended particulate instruments. The samples are later chemically analyzed in the laboratory.

TABLE 12

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION		PAGE 1		AIR COMPLIANCE MONITORING					
POLLUTANT--NITROGEN DIOXIDE				DISTRIBUTION--LOGNORMAL					
TOWN NAME	SITE	YEAR	SAMPLES	MEAN	95-PCT-LIMITS LOWER	UPPER	STD DEVIATION	PREDICTED DAYS OVER 100 UG/M3	PREDICTED DAYS OVER 282 UG/M3
BERLIN	01	1976	13	49.7	35	64	24.304	24	
BRIDGEPORT	01	1976	57	69.1	61	77	31.261	77	2
BRIDGEPORT	03	1976	13	62.9	51	75	20.216	29	
BRIDGEPORT	123	1976	59	70.3	63	77	29.970	67	
BRISTOL	01	1976	52	53.1	45	61	31.396	29	
BRISTOL	04	1976	14	11.1	7	16	7.770		
BURLINGTON	01	1976	9	9.8	3	17	8.832		
COLCHESTER	01	1976	10	33.6	22	45	16.076	3	
DANBURY	123	1976	57	41.1	35	47	23.155	24	
DERBY	123	1976	56	52.1	41	64	46.595	24	
EAST HARTFORD	01	1976	13	40.6	26	56	25.370	29	1
EAST HARTFORD	02	1976	55	41.2	34	48	27.462	20	
EAST WINDSOR	01	1976	13	60.2	44	76	26.740	29	
ENFIELD	123	1976	61	44.6	40	50	21.365	7	
GREENWICH	01	1976	54	73.3	64	82	36.327	77	2
GREENWICH	04	1976	57	53.9	48	60	26.323	35	
GREENWICH	08	1976	54	35.9	32	40	15.819	2	



POLLUTANT--NITROGEN DIOXIDE

DISTRIBUTION--LOGNORMAL

TOWN NAME	SITE	YEAR	SAMPLES	MEAN	95-PCT-LIMITS		STD DEVIATION	PREDICTED DAYS OVER 100 UG/M3	PREDICTED DAYS OVER 282 UG/M3
					LOWER	UPPER			
GROTON	123	1976	58	41.6	38	45	14.171	4	
HARTFORD	02	1976	58	58.5	53	64	22.128	35	
HARTFORD	123	1976	62	65.6	59	72	27.472	58	
LITCHFIELD	01	1976	13	38.8	30	48	15.094	4	
MANSFIELD	01	1976	11	35.1	24	47	17.433	2	
MERIDEN	02	1976	54	51.7	44	60	31.479	42	2
MIDDLETOWN	03	1976	13	61.3	47	75	23.869	35	
MILFORD	01	1976	13	56.6	37	77	33.575	67	8
NAUGATUCK	01	1976	13	43.0	30	56	21.828	42	3
NEW BRITAIN	02	1976	16	59.6	46	73	25.908	35	
NEW BRITAIN	123	1976	43	39.1	34	44	16.941	4	
NEW HAVEN	01	1976	55	67.9	61	75	28.160	58	
NEW HAVEN	123	1976	57	73.5	66	81	30.813	67	
NORWALK	05	1976	57	74.4	66	83	35.956	77	1
NORWICH	01	1976	59	43.9	40	48	18.365	8	
OLD SAYBROOK	01	1976	11	50.9	38	64	19.934	8	
PUTNAM	02	1976	13	34.2	22	46	19.858	2	
STAMFORD	07	1976	56	53.3	47	59	24.870	42	1

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

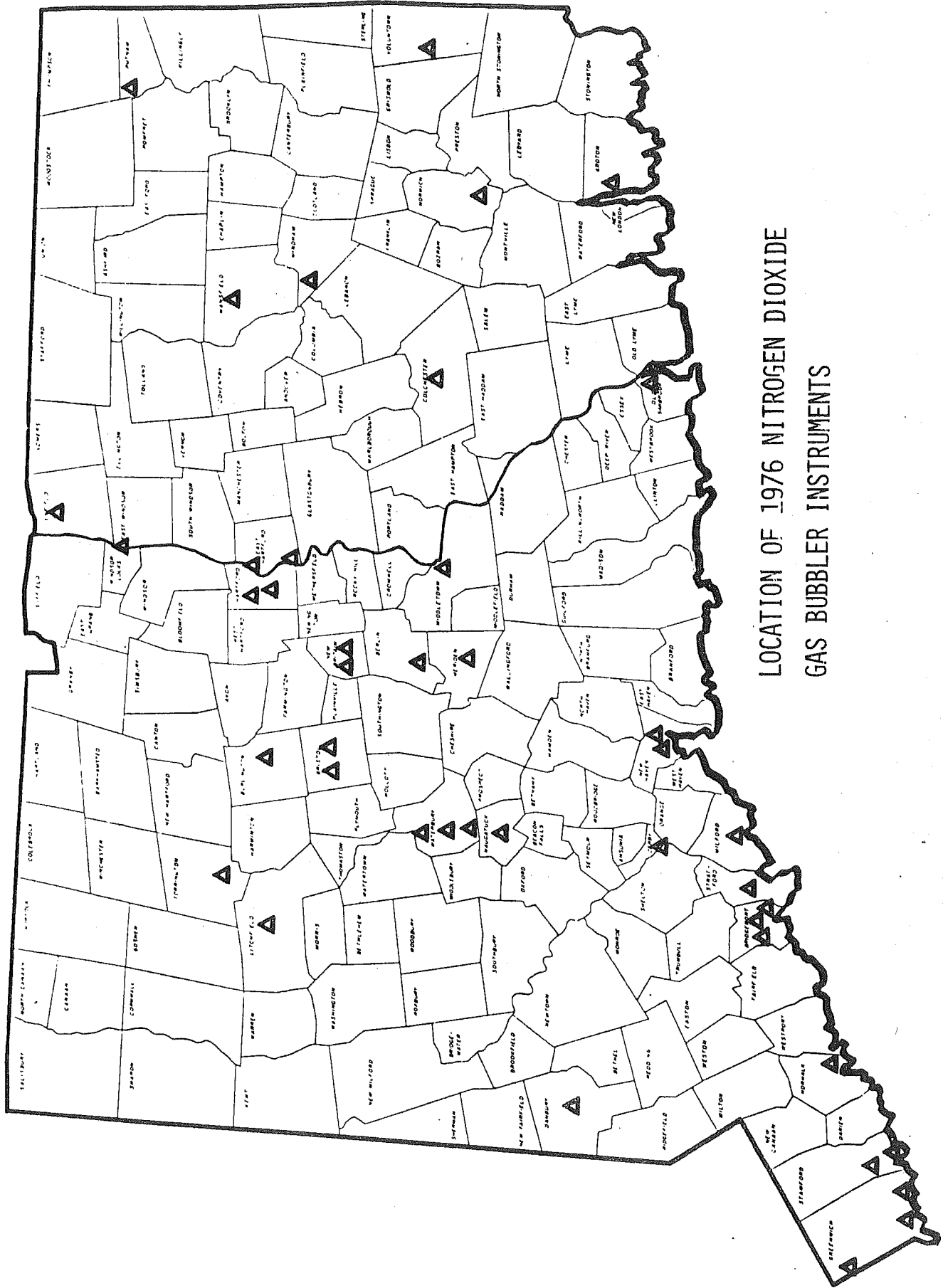
PAGE 3

AIR COMPLIANCE MONITORING

POLLUTANT--NITROGEN DIOXIDE

DISTRIBUTION--LOGNORMAL

TOWN NAME	SITE	YEAR	SAMPLES	MEAN	95-PCT-LIMITS		STD DEVIATION	PREDICTED DAYS OVER 100 UG/M3	PREDICTED DAYS OVER 282 UG/M3
					LOWER	UPPER			
STAMFORD	123	1976	56	62.6	57	68	23.375	42	
STRATFORD	05	1976	58	69.1	62	76	27.554	58	
TORRINGTON	123	1976	57	47.7	43	52	18.254	5	
VOLUNTOWN	01	1976	12	22.8	17	28	8.899		
WATERBURY	02	1976	13	57.7	44	72	23.545	24	
WATERBURY	03	1976	13	61.4	37	86	41.355	50	1
WATERBURY	123	1976	60	65.6	60	71	24.352	50	
WILLIMANTIC	01	1976	10	41.9	30	53	16.208	8	



LOCATION OF 1976 NITROGEN DIOXIDE  
GAS BUBBLER INSTRUMENTS

## VI. CARBON MONOXIDE

### Conclusions:

The eight-hour NAAQS was exceeded in five urban centers in Connecticut (New Britain 002, New Haven 007, Norwalk 005, Stamford 123 and Waterbury 004) but no violations of the one-hour standard were recorded in 1976.

In general, levels recorded in 1976 were slightly lower than in 1975.

### Discussion of Data:

The network in 1976 consisted of 12 carbon monoxide monitors, one less than in 1975. A review of the network, as part of the annual State Implementation Plan review, has resulted in several changes: a new site in Waterbury (004), replacing the former one (Waterbury 123); the elimination of sites Bridgeport 123, Groton 123 and Hartford 123, none of which were properly placed to record violations of the standards. Also underway is a relocation of the Stamford CO site. Improvements were made in the sampling probe exposure at Bridgeport 004, New Britain 002, and Hartford 009.

CO levels from the past several years were examined to determine whether the new car CO emission standards had resulted in a downward trend in measured levels, but no significant changes were evident.

### Method of Measurement:

The DEP Air Monitoring Unit uses instruments employing non-dispersive infra red techniques to continuously measure carbon monoxide levels. The instantaneous concentrations are recorded on strip charts from which hourly averages are extracted. The instruments are fairly insensitive to sampling line length, but concentrations vary dramatically with inlet exposure and proximity to traffic lanes.

TABLE 13  
CARBON MONOXIDE ANNUAL SUMMARY

Site	Maximum 8-Hour Average	Time <sup>1</sup> of Maximum 8-Hour	2nd High 8-Hour Average	Time <sup>1</sup> of 2nd High 8-Hour	Maximum 1-Hour Average	Time <sup>2</sup> of Maximum 1-Hour	2nd High 1-Hour Average	Time <sup>2</sup> of 2nd High 1-Hour
Bridgeport 004	10.3	9/2/16	9.6	12/20/10	20.0	12/20/09	16.2	12/15/19
Bridgeport 123*	7.3	1/8/01	6.7	2/17/07	15.0	1/7/23	13.0	1/7/08
Greenwich 001	10.6	12/15/23	9.3	1/26/08	19.0	12/15/20	16.0	9/13/08
Groton 123*	9.4	3/9/19	7.6	2/11/24	12.5	2/28/16	11.2	2/11/17
Hartford 009	7.9	7/23/16	7.9	9/14/13	15.7	12/7/09	12.0	12/6/09
Hartford 123*	10.4	1/13/17	6.9	1/16/19	22.5	1/13/17	21.5	1/16/17
New Britain 002*	15.0	1/13/21	13.4	1/13/13	21.5	1/13/09	21.0	1/13/17
New Haven 007	10.6	12/2/16	10.2	1/21/13	22.5	12/2/12	16.5	9/14/09
Norwalk 005	11.3	1/7/16	10.8	4/17/03	22.0	1/7/11	21.0	2/25/14
Stamford 123	12.1	8/12/09	11.2	8/12/17	19.6	1/24/24	19.0	12/15/19
Waterbury 004*	13.7	11/4/20	12.5	9/17/17	27.5	11/4/13	25.0	11/4/18
Waterbury 123*	8.4	1/26/22	6.4	1/7/14	17.6	1/7/09	14.0	1/26/18

\*Partial Year

<sup>1</sup>Time of 8-hour averages is reported as follows: month/day/hour (EST) specifying the end of the 8-hour average period.

<sup>2</sup>Time of 1-hour averages is reported as follows: month/day/hour (EST) specifying the end of the 1-hour average period.

Note: All concentrations are in ppm.

TABLE 14  
1976 CARBON MONOXIDE SEASONAL FEATURES

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bridgeport 004	Max 12.5	13.5	12.5	12.5	6.5	9.5	--	12.0	15.0	11.0	8.5	20.0
	Avg 3.9	2.9	2.3	2.4	2.0	2.9	--	4.9	3.6	2.4	2.3	3.4
Bridgeport 123	Max 15.0	7.0	--	--	--	--	--	--	--	--	--	--
	Avg 1.3	3.4	--	--	--	--	--	--	--	--	--	--
Greenwich 001	Max 12.5	14.0	6.0	15.0	7.5	10.0	6.5	7.0	16.0	9.5	13.0	19.0
	Avg 2.6	2.2	1.3	1.8	1.3	2.2	2.1	1.6	1.5	1.0	2.5	1.3
Groton 123	Max 6.5	12.5	11.1	9.1	--	--	--	--	--	--	--	--
	Avg 1.6	3.9	2.4	2.6	--	--	--	--	--	--	--	--
Hartford 009	Max 11.5	6.5	3.5	8.0	9.0	10.0	10.0	9.9	10.5	9.5	8.5	15.7
	Avg 1.6	0.8	0.5	1.8	2.6	3.3	3.3	3.9	3.2	2.5	1.7	2.3
Hartford 123	Max 22.5	7.7	10.4	11.0	8.9	5.0	6.5	7.0	--	--	--	--
	Avg 1.4	1.3	1.6	1.9	1.4	1.3	1.3	1.3	--	--	--	--
New Britain 002	Max 21.5	16.0	13.0	13.5	13.5	14.5	15.5	8.0	--	--	--	--
	Avg 4.8	4.1	3.1	3.8	3.1	2.8	3.1	3.6	--	--	--	--
New Haven 007	Max 15.5	15.0	10.5	14.5	7.5	10.5	11.5	14.0	16.5	11.0	12.5	22.5
	Avg 2.6	2.2	2.2	2.8	1.6	4.3	3.8	2.9	3.4	2.5	2.1	3.8
Norwalk 005	Max 22.0	21.0	10.0	15.5	10.0	9.5	10.0	10.5	13.0	17.5	20.0	21.5
	Avg 3.5	3.5	2.6	2.8	2.4	2.7	2.4	3.1	3.4	3.1	3.6	4.1
Stamford 123	Max 19.6	15.0	12.3	11.0	7.0	8.1	10.6	12.8	10.4	8.1	16.1	19.0
	Avg 3.3	2.4	2.2	3.2	2.1	2.7	2.7	4.5	3.6	2.0	1.8	2.8
Waterbury 004	Max --	--	--	--	--	--	--	8.5	20.0	16.5	27.5	22.0
	Avg --	--	--	--	--	--	--	1.5	3.2	3.1	3.7	3.0
Waterbury 123	Max 17.6	12.3	8.7	8.0	4.6	4.5	3.7	--	--	--	--	--
	Avg 2.1	1.9	1.6	1.3	1.0	1.0	1.4	--	--	--	--	--

(All values are ppm)  
Max is maximum 1-hour average  
Avg is monthly average



## VII. SPECIAL MONITORING STUDIES

In an effort to improve monitoring techniques and gain a better understanding of the ambient air quality in Connecticut, the Air Monitoring Unit conducted several special studies in 1976. Although a majority of these studies pertained to the air pollutants for which EPA has established national ambient standards, some work has been done concerning other recognized pollutants. The following sections will discuss these special studies.

### ASBESTOS MONITORING

An ambient air asbestos survey was conducted during late 1975 and early 1976 to define the magnitude of the health hazard posed by airborne asbestos fibers in Connecticut to provide information for use in the establishment of an ambient air quality standard for asbestos at some future time. A newly developed low volume particulate sampler, which operates continuously for 30-days at an air sampling flow rate of 4 cfm, equipped with special membrane filters was used to collect ambient TSP samples for subsequent chrysotile asbestos electron microscopic determination by the Batelle-Columbus Laboratories.

Approximately 30 monitoring sites were selected; locations included "typical" urban sites removed from known sources of asbestos emissions, rural-background sites and stations contiguous to 4 industrial users of asbestos (i.e., manufacturers of friction products, insulated wire and cable, ammunition and molding compounds) and 3 toll plazas situated at various points along Interstate-95. Ambient chrysotile asbestos levels removed from asbestos emission sources in both urban and rural locations were below  $10 \text{ ng/m}^3$ . However, asbestos concentrations above  $30 \text{ ng/m}^3$  were measured near each of the industrial users of asbestos. Furthermore, asbestos levels adjacent to the toll plazas were also elevated (in the  $10 \text{ ng/m}^3$  to  $25 \text{ ng/m}^3$  range), implicating asbestos emissions from vehicle brake lining decomposition as a significant source of airborne asbestos fibers.



## TRANSPORT OF PARTICULATE MATTER

Several types of statistical techniques were used to ascertain whether Total Suspended Particulate (TSP) concentrations measured during 1971-1975 at some 80 sites distributed throughout Connecticut demonstrated higher values on days when the general air mass flow was from the New York City Area (NY-Complex) to Connecticut (i.e., southwesterly wind flow). Over 80% of Connecticut's monitoring sites exhibited significantly elevated TSP concentrations during southwesterly wind flow. Only 2 (<5%) locations failed to demonstrate a SW directional dependency according to any of the 3 statistical procedures used. Mean TSP concentrations were 15% to almost 200% higher during periods of persistent southwesterly wind flow as compared to days when the prevailing winds were from other directions. On the other hand, both northeasterly and northwesterly wind flow were associated with lower TSP levels for approximately one-third of the monitoring sites investigated.

On a short-term basis, the average impact of particulate transport during persistent SW wind flow varied from 13 to 60  $\mu\text{g}/\text{m}^3$ , generally decreasing with distance from the NY-Complex. On a percentage basis, the short-term "transport effect" varied from 14 to 69% of "typical" observed daily TSP levels. The "transport effect" demonstrated a statistically significant inverse negative correlation with radial distance from the NY-Complex which further strengthens the transport hypothesis. On a long-term basis, the average impact of particulate transport during SW wind flow varied from 1 to 11  $\mu\text{g}/\text{m}^3$ , again decreasing with increasing distance from the NY-Complex. On a percentage basis, the long-term "transport effect" varied from 1.5 to 17.7% of long-term (e.g., 1-year, 5-year) mean TSP levels.

It is strongly recommended that some sort of regional TSP control strategy be formulated to reduce the transport of suspended particulates into Connecticut.

## SULFUR DIOXIDE BUBBLER MONITORING

A special study to improve the sample collection efficiency of the modified West-Gaeke bubbler method during the summer months was begun in 1976. Previously, it was observed that sample solutions containing SO<sub>2</sub> decayed significantly at temperatures over 90°F (up to 40% loss of collected SO<sub>2</sub> when the solution was exposed to 105°F for 24 hours).

The approach taken was to put the SO<sub>2</sub> bubbler unit in a small refrigerator where the solution temperature could be controlled at around 60°F. There were several problems encountered using this method, the primary concern being excessive condensation in the intake tubing during warm humid days. Once condensation forms the water acts as a scrubber absorbing whatever SO<sub>2</sub> is present in the sample air. Condensation was greatly reduced by insulating the intake tubing and using a two-timer system, which turns on the refrigerator only after sampling has begun so as not to pre-cool the insulation (which would render it ineffective). This two-timer system also allows the refrigerator to remain on until the samples are retrieved by field technicians.

Analysis of the few samples taken before the cool weather set in last fall showed up to 60% improvement in the collection efficiency of the bubbler while sampling on warm sunny days. However, until further testing is done on this refrigerated system this summer, SO<sub>2</sub> bubbler data collected during the summer months will be suspect due to possible thermal degradation.

Recent improvements by several instrument manufacturers employing thermoelectric cooling directly to the bubbler tubes look promising and will be investigated during the coming year.

## HISTORICAL TOTAL SUSPENDED PARTICULATE DATA

A tabulation of total suspended particulate data from 1957 through 1976 has been prepared and may be purchased, at cost, from the Department of Environmental Protection.

## PASSIVE SAMPLING ERROR

Some preliminary investigations by Connecticut DEP staff members and others had indicated that substantial particulate matter would be collected on a high volume sampler filter while the sampling motor was not operating (passive).

A standard high volume sampler filter is typically mounted a few days before the sampling day (high volume samples run every sixth day) and retrieved a few days after. The average field time for our filters is six days. In 1976, fourteen passive samples of seven days duration were analyzed. The average weight increase was .0157 grams.

Had these samples actually run as high volume (hi-vol) filters sometime during the seven day period with flows of 50 cfm for 24 hours ( $2038.8 \text{ m}^3/\text{day}$ ) this weight would have added  $7.7 \mu\text{g}/\text{m}^3$  to the reported hi-vol measurement (the maximum would have been  $15.2 \mu\text{g}/\text{m}^3$ ). The measured hi-vol average for samples from a nearby site for the same time period was  $55 \mu\text{g}/\text{m}^3$ , implying the passive sampling error results in an over estimate of 10 to 20%.

Inverted filters, placed along side the upright passive samples recorded very small weight gains. Microscopic evaluation of the filters indicated most of the particles on the inverted filters were very small. The staff has concluded, therefore, that the most important mechanism for passive particulate matter collection is settling of particulates.

Since neither settleable nor non-sampling-period matter should be included in a total suspended particulate matter sample, it appears that most hi-vol measurements have a positive bias. Corrective action requires either electronically operated covers or more frequent visits to the site by field personnel, neither of which is possible with current resource limitations. While the implications are being further considered, the existence of this error is being accounted for in Air Quality Maintenance Plan development.

## LOW VOLUME TSP MEASUREMENTS

As discussed in the 1975 Air Quality Summary, a continuous 30-day low volume (i.e., lo-vol) sampler was developed and field tested. This low volume sampler, which is enclosed in a shelter similar to a hi-vol and uses the same glass fiber filter paper, operates at an air sampling flow rate approximately one-tenth that used by a standard hi-vol (i.e., 4 cfm as opposed to 40 to 60 cfm). The air flow through the lo-vol is measured by a temperature compensating dry gas meter. The lo-vol measurement is essentially an arithmetic average for the entire 30-day sampling interval.

In April, 1976 hi-vol samplers at eight monitoring locations were replaced with lo-vols to provide information concerning background TSP concentrations. The monthly lo-vol TSP values were adjusted to daily sample period geometric means.

The following table shows the monthly lo-vol sample concentrations and the adjusted annual geometric means. These geometric means can be directly compared to those obtained in previous years by hi-vol sampling at the respective sites.

Since the lo-vol sampler is not a reference or equivalent method, these data were not included in the routine discussion of the states TSP air quality.

Dates	Berlin	Burlington	Kent	Morris	Mansfield	Putnam	Voluntown	Willimantic
April	X	32	X	61	47	75	47	52
May	38	39	27	43	51	42	67	40
June	43	27	34	50	52	48	61	49
July	32	59	X	31	41	35	37	40
August	42	44	43	35	40	35	34	48
September	29	21	25	26	36	43	28	50
October	26	25	18	20	31	38	15	48
November	28	X	25	22	45	46	21	51
December	31	9	20	24	40	51	25	48
Average	32	23	25	29	41	43	28	47

Note: Units in  $\mu\text{g}/\text{m}^3$

CHEMICAL COMPOSITION OF TOTAL  
SUSPENDED PARTICULATE MATTER SAMPLES

Annual averages of sixteen components or characteristics of the particulate matter collected at each sampling location have been computed for the years 1971 through 1975 and are tabulated in Table 15. The abbreviations used in the table are defined below. All values shown are annual arithmetic means in micrograms per cubic meter except for pH, which is a non-dimensional measure of acidity.

BE	- Beryllium
CD	- Cadmium
CR	- Chromium
CU	- Copper
FE	- Iron
PB	- Lead
MN	- Manganese
NI	- Nickel
ZN	- Zinc
V	- Vanadium
NO4	- Total Nitrates
SO4	- Total Sulfates
NH4	- Ammonium
NA	- Sodium
pH	- Acidity
BENZ	- Total Benzene Soluables

TABLE 15  
CHEMICAL COMPOSITION OF TOTAL SUSPENDED PARTICULATE MATTER SAMPLES

TOWN	SITE	YR	BE	CD	CR	CU	FE	PB	MN	NI	ZN	V	NO4	SO4	NH4	NA	pH	BENZ
ANSANIA	003	71	0.0587	C.009	C.55	1.57	1.76	0.033	0.036	2.46	0.24	1.97	11.81	6.95	6.77			
BRIDGEPORT	001	71	0.0052	C.008	C.70	0.61	1.47	0.020	0.033	1.13	0.25	4.05	8.30	6.33	4.11			
BRISTOL	001	71	0.0026	C.007	0.22	0.68	0.79	0.025	0.014	0.35	0.13	1.81	6.12	6.32	2.99			
DANBURY	001	71	0.0030	C.007	0.11	0.89	1.97	0.028	0.027	0.47	0.13	2.11	11.58	6.50	5.44			
ENFIELD	002	71	0.0047	C.013	16.22	0.45	0.29	0.018	0.046	2.63	0.08	2.01	5.28	6.70	3.43			
FAIRFIELD	001	71	0.0023	C.006	0.16	0.68	1.12	0.017	0.020	0.34	0.12	1.75	8.32	6.67	3.70			
GREENWICH	002	71	0.0033	C.015	C.31	0.78	1.54	0.019	0.013	0.28	0.07	1.73	9.15	6.57	4.04			
GREENWICH	003	71	0.0027	C.007	C.24	0.61	1.29	0.015	0.013	0.25	0.09	1.16	6.82	6.84	4.02			
GREENWICH	007	71	0.0028	C.009	0.17	0.43	0.83	0.014	0.017	0.23	0.12	1.20	9.67	6.90	3.77			
GREENWICH	008	71	0.0029	C.011	0.09	0.95	1.64	0.021	0.017	0.43	0.10	1.52	8.78	6.79	4.53			
GRUON	001	71	0.0035	C.022	0.77	1.27	2.08	0.036	0.056	0.59	0.43	1.47	17.27	6.52	4.77			
HARTFORD	003	71	0.0030	C.013	C.13	1.25	1.85	0.027	0.043	0.46	0.30	1.19	10.43	6.65	7.83			
HARTFORD	005	71	0.0045	C.030	0.49	1.59	2.06	0.044	0.057	0.50	0.43	1.06	16.42	6.51	9.90			
LITCH CTY(MORRIS)	001	71	0.0013	C.007	C.41	0.34	0.38	0.011	0.005	0.22	0.15	0.71	4.38	6.97	2.08			
MANCHESTER	001	71	0.0023	C.019	C.20	0.61	0.66	0.022	0.020	0.40	0.15	0.78	9.37	6.54	3.58			
MANSFIELD	001	71	0.0011	C.006	0.12	0.40	1.09	0.012	0.014	0.20	0.07	0.77	9.67	6.45	3.05			
MERIDEN	001	71	0.0028	C.010	1.38	0.40	1.09	0.012	0.014	0.46	0.06	1.02	3.47	7.36	3.72			
MERIDEN	002	71	0.0039	C.016	0.75	1.16	1.74	0.036	0.113	1.38	0.24	1.27	10.97	6.84	5.73			
MERIDEN	003	71	0.0033	C.017	C.07	0.80	1.29	0.032	0.032	0.80	0.22	1.40	9.58	7.17	4.45			
MERIDEN	005	71	0.0025	C.022	0.57	1.23	1.88	0.069	0.068	87.36	0.25	3.59	14.27	6.77	5.80			
MERIDEN	006	71	0.0075	C.020	0.66	0.73	0.94	0.025	0.022	0.41	0.13	1.24	10.48	7.11	4.21			
MIDDLETOWN	001	71	0.0043	C.007	0.25	0.31	0.41	0.014	0.014	0.54	0.07	0.79	5.65	6.59	2.17			
MIDDLETOWN	003	71	0.0032	C.011	0.59	0.86	1.62	0.032	0.034	0.52	0.14	0.62	10.08	6.48	4.44			
MILFORD	001	71	0.0036	C.008	0.23	0.65	1.00	0.020	0.023	0.42	0.11	0.99	8.80	6.79	3.57			
MILFORD	002	71	0.0040	C.007	0.13	0.80	1.26	0.019	0.032	0.37	0.19	0.89	8.92	6.71	3.30			
MILFORD	006	71	0.0029	C.009	C.09	0.48	0.64	0.016	0.018	0.28	0.10	0.69	7.42	6.90	2.21			
NAUGATUCK	001	71	0.0051	C.013	0.12	0.91	1.51	0.024	0.025	0.41	0.21	1.51	10.28	6.92	5.20			
NEW BRITAIN	001	71	0.0044	C.014	C.13	1.30	1.48	0.029	0.033	0.48	0.22	0.72	9.82	6.68	6.55			
NEW BRITAIN	002	71	0.0044	C.013	C.20	1.26	2.14	0.030	0.036	0.76	0.26	0.95	13.63	6.59	7.57			
NEW BRITAIN	003	71	0.0028	C.009	C.25	1.53	1.93	0.031	0.018	0.43	0.12	0.66	8.62	6.76	7.50			
NEW BRITAIN	004	71	0.0020	C.006	0.20	0.52	1.04	0.016	0.021	0.39	0.13	0.76	5.82	6.79	3.00			
NEW BRITAIN	005	71	0.0028	C.007	0.14	0.53	1.16	0.017	0.017	0.42	0.12	0.58	8.67	6.62	3.60			
NEW HAVEN	001	71	0.0029	C.002	0.06	0.59	1.58	0.012	0.030	0.19	0.22	3.13	8.45	9.55	3.91			
NEW HAVEN	002	71	0.0039	C.011	C.20	0.92	1.37	0.025	0.040	0.37	0.16	1.12	9.77	7.30	6.25			
NEW HAVEN	003	71	0.0052	C.003	0.27	0.67	1.12	0.011	0.024	0.15	0.13	2.40	7.85	9.50	3.21			
NEW HAVEN	005	71	0.0098	C.004	0.35	1.08	2.61	0.018	0.030	0.34	0.23	3.83	10.00	9.30	6.87			
NEW HAVEN	009	71	0.0034	C.001	0.21	0.96	2.90	0.016	0.030	0.19	0.26	3.30	10.00	9.50	6.43			
NORWALK	001	71	0.0027	C.006	0.09	0.60	1.10	0.018	0.011	0.36	0.10	1.16	11.32	7.32	4.20			
NORWALK	005	71	0.0020	C.011	0.10	0.90	1.33	0.023	0.015	0.37	0.08	1.23	7.20	7.39	4.69			
NORWICH	001	71	0.0015	C.011	0.26	0.76	0.94	0.016	0.025	0.30	0.16	0.96	6.72	6.62	4.70			
ORANGE	003	71	0.0025	C.006	0.12	0.36	0.37	0.012	0.013	0.40	0.07	0.73	5.60	6.64	1.89			
PUTNAM	002	71	0.0035	C.013	0.13	1.13	1.08	0.040	0.048	0.66	0.21	1.41	16.53	6.40	8.09			
STAMFORD	001	71	0.0027	C.007	0.21	0.94	1.28	0.020	0.034	0.40	0.13	3.09	8.90	7.66	4.44			
STAMFORD	003	71	0.0074	C.018	0.10	1.07	2.09	0.027	0.025	0.48	0.20	3.39	15.17	7.81	3.91			
STAMFORD	004	71	0.0027	C.009	1.80	0.56	1.05	0.015	0.016	0.32	0.11	2.04	6.01	7.17	3.54			
STAMFORD	010	71	0.0035	C.004	0.06	0.85	1.39	0.033	0.011	0.46	0.11	3.85	11.55	7.65	4.01			
STAMFORD	001	71	0.0043	C.008	1.61	0.53	0.92	0.020	0.039	0.66	0.25	1.96	9.67	7.17	3.54			
STAMFORD	002	71	0.0039	C.011	0.15	0.52	1.08	0.015	0.075	0.50	0.24	1.59	10.13	7.32	3.77			
THORASTON	003	71	0.0039	C.010	0.17	0.80	0.89	0.022	0.032	2.32	0.18	1.87	8.58	7.12	4.72			
TORRINGTON	001	71	0.0030	C.010	0.32	0.90	1.25	0.036	0.026	0.40	0.16	0.89	9.86	6.70	6.45			
VERMONT	001	71	0.0005	C.001	C.09	0.42	0.81	0.015	0.010	1.02	0.10	2.64	5.40	6.40	3.49			
WATERBURY	001	71	0.0062	C.019	0.32	0.96	1.30	0.029	0.052	1.85	0.39	1.18	12.16	6.28	7.10			
WINCHESTER	001	71	0.0013	C.010	0.33	0.57	0.75	0.015	0.008	0.06	0.05	1.19	4.44	7.78	3.85			
ANSANIA	003	72	0.0000	C.014	C.30	1.12	1.66	0.021	0.030	2.00	0.13	3.67	13.16	0.31	8.57	4.83		

TOWN	SITE YR	BE	CD	CR	CU	FE	PB	IN	NI	ZN	V	NO4	SO4	NH4	NA	PH	BENZ
BRIDGEPORT	001 72	0.0000.0078	C.007	C.007	C.57	0.57	1.45	0.015	0.033	0.61	0.11	3.02	12.61	0.25	8.27	35.22	
BRIDGEPORT	002 72	0.0000.0051	C.009	C.009	C.56	1.37	3.33	0.030	0.028	0.54	0.18	4.80	23.98	0.11	7.85	2.26	
BRISTOL	001 72	0.0000.0183	C.005	C.005	C.24	0.46	0.89	0.012	0.014	0.28	0.17	1.69	11.89	0.26	6.80	3.04	
DANBURY	001 72	0.0000.0025	C.008	C.008	0.19	1.13	1.03	0.017	0.016	0.36	0.13	0.77	9.70	0.26	7.87	5.23	
ENFIELD	001 72	0.0000.0084	C.006	C.006	C.11	0.87	1.41	0.016	0.022	0.26	0.12	2.06	11.54	0.12	9.40	1.75	
ENFIELD	005 72	0.0000.0043	C.000	C.000	0.08	0.08	0.71	0.004	0.051	0.19	0.05	1.62	9.20	0.24	7.95	1.89	
FAIRFIELD	002 72	0.0000.0035	C.003	C.003	4.41	0.18	1.51	0.014	0.011	0.17	0.04	3.06	7.18	0.11	7.85	3.27	
GREENWICH	001 72	0.0000.0040	C.006	C.006	0.10	0.82	1.51	0.014	0.016	0.29	0.07	3.06	11.64	0.11	7.62	4.05	
GREENWICH	002 72	0.0000.0040	C.009	C.009	0.25	0.78	1.82	0.015	0.016	0.37	0.08	2.96	12.80	0.16	7.87	4.17	
GREENWICH	003 72	0.0000.0038	C.009	C.009	0.19	0.86	1.70	0.016	0.014	0.41	0.06	2.98	9.72	0.18	8.02	1.83	
GREENWICH	007 72	0.0000.0036	C.005	C.005	0.19	0.38	0.80	0.013	0.018	0.30	0.07	1.86	8.84	0.17	7.82	4.33	
GREENWICH	008 72	0.0000.0033	C.008	C.008	0.27	1.11	1.47	0.017	0.016	0.27	0.03	2.68	7.41	0.18	8.67	1.86	
GROTON	001 72	0.0000.0022	C.004	C.004	0.61	0.44	0.80	0.012	0.020	0.08	0.08	3.76	11.67	0.51	8.07	5.38	
HARTFORD	003 72	0.0000.0038	C.007	C.007	C.37	1.12	1.97	0.019	0.027	0.24	0.22	2.77	12.43	0.11	7.75	4.17	
HARTFORD	004 72	0.0000.0037	C.005	C.005	C.77	0.86	1.48	0.013	0.014	0.16	0.11	1.89	8.49	0.05	8.15	1.70	
LITCH CITY (MCRR)	001 72	0.0000.0032	C.000	C.000	0.20	0.44	0.54	0.010	0.028	0.05	0.03	2.46	8.43	0.20	8.0	1.01	
MANCHESTER	001 72	0.0000.0048	C.006	C.006	0.37	0.35	1.08	0.015	0.031	0.28	0.14	6.87	9.22	0.46	8.10	3.40	
MANFIELD	001 72	0.0000.0041	C.009	C.009	0.26	1.67	1.34	0.021	0.032	0.25	0.11	3.66	9.10	0.31	7.87	3.15	
MERIDEN	001 72	0.0000.0032	C.018	C.018	1.25	0.89	1.86	0.018	0.017	0.58	0.09	2.52	9.16	0.30	8.15	3.58	
MERIDEN	002 72	0.0000.0045	C.004	C.004	0.79	1.26	1.65	0.024	0.030	1.10	0.11	3.64	9.34	0.20	7.02	3.09	
MERIDEN	003 72	0.0000.0042	C.004	C.004	0.27	1.18	1.62	0.038	0.021	0.35	0.14	3.34	11.78	0.19	6.10	2.76	
MERIDEN	004 72	0.0000.0047	C.006	C.006	0.50	0.80	1.51	0.022	0.055	2.55	0.00	1.53	1.66	0.30	6.37	4.01	
MERIDEN	005 72	0.0000.0134	C.004	C.004	C.35	0.69	1.09	0.036	0.047	4.38	0.13	3.80	12.17	0.26	7.02	2.68	
MERIDEN	006 72	0.0000.0052	C.006	C.006	C.63	0.75	1.39	0.025	0.026	0.47	0.24	3.90	16.16	0.34	7.67	2.93	
MIDDLETOWN	001 72	0.0000.0049	C.036	C.036	0.38	0.54	0.82	0.018	0.023	0.86	0.11	0.88	7.87	0.18	7.72	1.95	
MIDDLETOWN	002 72	0.0000.0017	C.008	C.008	C.49	0.15	0.47	0.009	0.007	0.92	0.00	1.24	8.07	0.55	8.10	5.61	
MIDDLETOWN	003 72	0.0000.0043	C.008	C.008	0.66	0.91	1.69	0.016	0.025	0.66	0.19	1.24	8.07	0.60	8.52	5.90	
MILFORD	001 72	0.0000.0036	C.001	C.001	0.10	0.51	0.91	0.012	0.022	0.25	0.06	2.56	10.13	0.16	8.07	3.03	
MILFORD	002 72	0.0000.0046	C.006	C.006	C.07	0.83	1.22	0.016	0.032	0.23	0.11	2.41	9.53	0.41	9.57	4.69	
MILFORD	006 72	0.0000.0048	C.004	C.004	0.09	0.47	0.85	0.012	0.020	0.13	0.08	2.07	9.01	0.31	9.30	4.74	
NAUGATUCK	001 72	0.0000.0069	C.004	C.004	0.16	1.26	1.88	0.026	0.030	0.64	0.19	3.77	12.32	0.17	9.47	2.88	
NEW BRITAIN	001 72	0.0000.0036	C.009	C.009	0.03	1.00	1.54	0.021	0.026	0.21	0.22	2.44	12.27	0.77	9.05	3.80	
NEW BRITAIN	002 72	0.0000.0047	C.007	C.007	0.23	1.22	1.83	0.021	0.029	0.77	0.18	2.76	7.93	0.76	9.37	1.45	
NEW BRITAIN	003 72	0.0000.0038	C.005	C.005	0.14	1.36	2.18	0.022	0.014	0.19	0.44	3.09	10.00	0.14	8.40	3.30	
NEW BRITAIN	004 72	0.0000.0039	C.008	C.008	0.43	0.55	1.01	0.015	0.018	0.19	0.12	2.82	9.54	0.19	8.82	3.27	
NEW BRITAIN	005 72	0.0000.0035	C.003	C.003	0.20	0.46	1.06	0.011	0.015	0.11	0.07	2.27	9.60	0.21	8.25	2.91	
NEW HAVEN	001 72	0.0000.0032	C.007	C.007	0.27	0.60	0.98	0.013	0.032	0.77	0.18	2.76	7.93	0.20	8.62	2.93	
NEW HAVEN	002 72	0.0000.0051	C.009	C.009	0.24	1.25	1.69	0.023	0.046	0.77	0.44	3.09	10.00	0.41	9.57	4.69	
NEW HAVEN	003 72	0.0000.0053	C.005	C.005	0.19	0.52	0.86	0.014	0.016	0.49	0.10	2.96	6.67	0.31	9.30	4.74	
NEW HAVEN	004 72	0.0000.0038	C.006	C.006	0.42	0.42	1.12	0.013	0.009	0.42	0.12	1.46	11.60	0.17	9.47	2.88	
NEW HAVEN	005 72	0.0000.0053	C.008	C.008	0.23	0.78	1.28	0.018	0.034	0.56	0.09	2.74	9.56	0.77	9.05	3.80	
NEW HAVEN	009 72	0.0000.0038	C.004	C.004	0.22	0.59	1.05	0.014	0.044	0.56	0.29	1.98	7.55	0.76	9.37	1.45	
NEW HAVEN	001 72	0.0000.0036	C.007	C.007	C.12	0.67	1.42	0.013	0.017	0.15	0.08	3.24	9.97	0.14	8.40	3.30	
NEW HAVEN	005 72	0.0000.0044	C.009	C.009	0.15	0.95	1.59	0.018	0.016	0.18	0.08	2.85	7.51	0.14	8.25	2.91	
NORWALK	001 72	0.0000.0021	C.005	C.005	0.19	0.67	1.09	0.011	0.023	0.05	0.13	3.04	9.91	0.19	8.82	3.27	
NORWICH	003 72	0.0000.0037	C.006	C.006	C.04	0.70	0.94	0.016	0.020	0.30	0.03	3.09	8.87	0.21	8.25	2.91	
ORANGE	002 72	0.0000.0018	C.003	C.003	C.17	0.61	0.78	0.015	0.016	0.07	0.05	2.83	12.09	0.20	8.62	2.93	
PUTNAM	001 72	0.0000.0055	C.031	C.031	C.20	1.78	2.44	0.032	0.046	0.28	0.28	6.01	16.71	0.34	8.52	6.90	
STAMFORD	003 72	0.0000.0076	C.011	C.011	0.08	1.35	2.33	0.025	0.048	0.32	0.28	5.02	14.13	0.64	8.12	7.52	
STAMFORD	004 72	0.0000.0047	C.007	C.007	1.15	0.67	1.69	0.018	0.026	0.27	0.14	3.24	11.74	0.14	8.55	4.46	
STAMFORD	010 72	0.0000.0061	C.011	C.011	0.23	0.74	1.91	0.022	0.023	0.20	0.04	4.93	14.53	0.22	9.70	3.29	
STRAITFORD	002 72	0.0000.0034	C.004	C.004	C.55	0.43	0.82	0.013	0.017	0.20	0.05	2.66	28.77	0.18	9.57	2.31	
STRAITFORD	001 72	0.0000.0045	C.009	C.009	C.31	0.45	1.51	0.020	0.046	0.45	0.43	3.96	10.95	0.37	9.30	5.83	
THOMASTON	003 72	0.0000.0049	C.004	C.004	0.23	0.66	1.15	0.017	0.021	0.93	0.17	2.45	11.50	0.31	8.45	4.04	
TORRINGTON	001 72	0.0000.0029	C.007	C.007	0.35	0.76	1.59	0.023	0.020	0.13	0.13	2.72	10.89	0.21	8.10	4.07	
WATERBURY	001 72	0.0000.0023	C.011	C.011	0.25	1.04	1.74	0.018	0.030	1.52	0.20	3.28	8.48	0.42	8.40	5.19	
WINCHESTER	001 72	0.0000.0019	C.004	C.004	C.56	0.46	0.83	0.011	0.013	0.06	0.05	2.38	6.08	0.04	8.47	2.30	
ANSONIA	003 73	0.0000.0086	C.006	C.006	C.33	1.05	1.35	0.016	0.022	0.95	0.07	2.66	8.82	0.04	7.87	3.28	

TOWN	SITE	YR	BE	CD	CR	CU	FE	PB	MN	NI	ZN	V	NO4	SO4	NH4	NA	pH	BENZ
BERLIN	001	73	0.00000.0017	C.005	C.37	0.25	0.57	0.008	0.007	0.29	0.29	0.02	1.24	7.44			6.89	1.87
BRIDGEPORT	001	73	0.09550.0058	C.009	C.68	0.54	1.02	0.011	0.015	0.28	0.28	0.07	3.11	8.59			7.63	2.78
BRIDGEPORT	002	73	0.04670.0244	C.010	C.28	0.66	1.45	0.032	0.019	0.26	0.26	0.04	2.10	9.40			6.73	4.07
BRISTOL	001	73	0.04140.0337	C.010	C.40	0.48	1.03	0.012	0.010	0.39	0.39	0.05	2.48	8.55			7.69	2.19
BRISTOL	002	73	0.00000.0224	C.009	C.78	0.76	0.50	0.011	0.006	0.34	0.34	0.05	0.48	5.67			6.40	2.43
BRISTOL	003	73	0.00000.0095	C.015	C.84	0.54	0.94	0.016	0.012	0.78	0.78	0.04	0.38	8.41			6.42	2.98
BRISTOL	004	73	0.00000.0270	C.014	C.50	0.70	2.54	0.016	0.011	1.15	1.15	0.03	0.90	4.40			6.33	6.11
BRUKLINGTON	001	73	0.00000.0024	C.006	C.48	0.24	0.44	0.006	0.010	0.34	0.34	0.01	0.21	7.57			3.94	1.86
DANBURY	001	73	0.00000.0029	C.007	0.11	0.92	1.05	0.018	0.010	0.40	0.40	0.03	1.73	7.44			6.87	3.56
DANBURY	002	73	0.00000.0024	C.005	C.19	0.82	1.08	0.018	0.013	0.45	0.45	0.06	0.92	8.23			6.58	3.32
ENFIELD	001	73	0.00000.0010	C.000	C.99	0.40	0.36	0.042		0.30	0.30	0.04	4.42	11.68			9.00	
ENFIELD	002	73	0.00000.0029	C.003	7.33	0.18	0.50	0.005	0.008	0.18	0.18	0.04	3.44	5.20			9.53	2.43
FAIRFIELD	001	73	0.00000.0032	C.006	C.26	0.60	1.03	0.012	0.010	1.39	1.39	0.03	1.53	7.13			6.69	2.04
GREENWICH	001	73	0.00000.0036	C.005	C.14	0.70	1.45	0.013	0.014	1.53	1.53	0.04	1.99	9.59			5.15	4.03
GREENWICH	002	73	0.00000.0044	C.005	C.14	0.69	1.38	0.013	0.014	1.47	1.47	0.03	2.39	7.16			6.47	3.34
GREENWICH	003	73	0.00000.0033	C.005	C.45	0.39	0.49	0.011	0.009	1.83	1.83	0.03	3.04	7.33			6.79	2.03
GREENWICH	007	73	0.00000.0043	C.004	C.12	0.25	0.65	0.008	0.011	1.67	1.67	0.06	1.35	9.03			6.65	2.02
GREENWICH	008	73	0.00000.0031	C.006	C.33	1.10	1.42	0.014	0.013	1.56	1.56	0.05	1.65	9.07			6.36	3.61
GROTON	001	73	0.11540.0016	C.007	C.26	0.49	0.79	0.012	0.018	0.26	0.26	0.05	1.06	4.19			7.01	2.31
HARTFORD	003	73	0.00000.0024	C.005	C.80	1.02	1.24	0.018	0.018	0.11	0.11	0.09	4.09	7.17			8.72	5.15
HARTFORD	004	73	0.00000.0040	C.004	C.26	0.73	1.11	0.020	0.017	1.64	1.64	0.05	2.63	8.23			8.73	3.24
JEWETT	001	73	0.00000.0019	C.005	C.26	0.49	0.34	0.012	0.009	0.16	0.16	0.02	0.31	7.00			7.21	2.77
LITCH CITY	001	73	0.00000.0017	C.002	C.24	0.43	0.49	0.006	0.008	0.09	0.09	0.02	2.86	9.29			8.84	1.95
MANCHESTER	001	73	0.00000.0022	C.002	C.25	0.43	0.82	0.011	0.010	0.11	0.11	0.06	2.47	9.85			8.27	2.70
MANSFIELD	001	73	0.00000.0044	C.003	C.12	0.24	0.29	0.010	0.012	8.26	8.26	0.04	5.13	11.02			6.60	2.22
MERIDEN	001	73	0.00000.0051	C.005	C.94	0.82	2.09	0.018	0.019	0.42	0.42	0.06	1.61	4.95			6.89	3.52
MERIDEN	002	73	0.00000.0043	C.004	C.05	0.73	1.36	0.020	0.028	0.84	0.84	0.12	2.09	9.44			7.66	2.42
MERIDEN	003	73	0.00000.0025	C.004	C.10	1.06	1.36	0.029	0.017	0.41	0.41	0.09	1.47	7.97			7.49	2.97
MERIDEN	005	73	0.00000.0049	C.006	C.35	0.85	1.30	0.026	0.049	2.36	2.36	0.09	1.89	7.66			7.47	2.68
MERIDEN	006	73	0.00000.0034	C.010	C.11	0.78	0.96	0.018	0.025	0.27	0.27	0.05	1.05	4.60			7.44	2.80
MIDDLETOWN	001	73	0.00000.0033	C.005	C.39	0.38	0.83	0.014	0.014	0.28	0.28	0.04	3.96	9.03			7.96	1.70
MIDDLETOWN	002	73	0.00000.0008	C.003	C.07	0.06	0.35	0.006	0.008	0.03	0.03	0.01	1.77	4.75			8.24	1.09
MIDDLETOWN	003	73	0.00000.0027	C.002	C.71	0.61	1.23	0.017	0.013	0.24	0.24	0.07	2.58	7.36			7.91	2.36
MIDDLETOWN	004	73	0.00000.0009	C.005	C.91	0.61	0.41	0.008	0.016	0.14	0.14	0.00	7.36	21.02			9.14	2.90
MILFORD	001	73	0.05840.0026	C.004	C.18	0.36	0.98	0.008	0.019	0.11	0.11	0.03	3.49	7.47			9.06	2.29
MILFORD	002	73	0.00000.0033	C.003	C.03	0.18	0.66	0.013	0.024	0.10	0.10	0.06	3.20	8.85			8.82	2.89
MILFORD	006	73	0.00000.0033	C.002	C.03	0.32	0.71	0.009	0.013	0.11	0.11	0.03	3.24	8.12			8.85	2.78
MORRIS	001	73	0.00000.0015	C.003	C.43	0.27	0.52	0.008	0.008	0.12	0.12	0.02	0.37	5.26			7.45	2.85
NAUGATUCK	001	73	0.00000.0030	C.007	C.17	1.10	1.50	0.019	0.015	0.47	0.47	0.31	4.49	9.69			8/26	2.97
NEW BRITAIN	001	73	0.00000.0020	C.003	C.06	0.45	1.10	0.012	0.025	0.07	0.07	0.07	1.91	1.83			7.60	2.47
NEW BRITAIN	002	73	0.00000.0034	C.005	C.23	1.01	1.58	0.023	0.022	0.22	0.22	0.09	4.14	8.85			7.95	4.69
NEW BRITAIN	003	73	0.00000.0031	C.003	C.26	1.36	1.73	0.023	0.014	0.16	0.16	0.07	3.59	8.35			7.59	4.72
NEW BRITAIN	004	73	0.09340.0036	C.004	C.48	0.52	1.15	0.014	0.020	0.18	0.18	0.06	3.32	7.53			7.08	3.58
NEW BRITAIN	005	73	0.00000.0025	C.003	C.31	0.45	1.08	0.011	0.011	0.15	0.15	0.06	2.50	7.62			8.08	3.11
NEW HAVEN	002	73	0.00000.0016	C.004	C.09	0.68	1.24	0.011	0.016	0.30	0.30	0.10	3.15	6.77			9.25	3.08
NEW HAVEN	003	73	0.04520.0025	C.003	C.07	0.45	0.85	0.009	0.020	0.26	0.26	0.04	2.28	7.44			8.31	3.71
NEW HAVEN	005	73	0.00000.0019	C.002	C.10	0.81	1.07	0.015	0.017	0.37	0.37	0.08	2.21	4.68			8.21	4.97
NEW HAVEN	009	73	0.00000.0019	C.002	C.07	0.45	0.96	0.010	0.015	0.25	0.25	0.08	1.81	7.11			8.07	2.87
NORWALK	001	73	0.00000.0027	C.005	C.25	0.77	1.40	0.013	0.016	0.82	0.82	0.06	2.10	5.42			7.39	4.15
NORWALK	005	73	0.00000.0028	C.006	C.17	0.70	1.30	0.013	0.011	0.26	0.26	0.04	1.60	5.48			7.31	2.79
OLD SAYBROCK	001	73	0.00000.0013	C.017	C.63	0.90	2.51	0.014	0.015	0.24	0.24	0.10	1.17	7.56			6.78	3.40
OLD SAYBROCK	002	73	0.00000.0017	C.003	C.22	0.78	1.33	0.014	0.022	0.26	0.26	0.07	1.10	3.69			6.40	5.83
ORANGE	003	73	0.00000.0028	C.005	C.04	0.69	0.80	0.016	0.012	0.21	0.21	0.05	2.18	5.70			7.46	2.82
PUTNAM	002	73	0.00000.0019	C.009	C.17	0.60	0.93	0.011	0.014	0.15	0.15	0.06	1.41	6.09			7.28	3.42
STAMFORD	001	73	0.00000.0039	C.014	C.49	1.36	2.09	0.023	0.023	0.27	0.27	0.05	1.61	7.45			6.37	5.82
STAMFORD	004	73	0.00000.0054	C.013	C.53	0.90	1.96	0.019	0.021	0.47	0.47	0.06	0.71	16.68			6.31	5.99
STAMFORD	010	73	0.00000.0032	C.012	C.13	0.71	1.32	0.014	0.016	0.44	0.44	0.04	1.26	9.42			6.87	3.73
STRAFORD	001	73	0.00000.0033	C.009	C.26	3.72	0.65	0.016	0.015	0.33	0.33	0.02	1.99	4.94			3.94	0.00
STRAFORD	003	73	0.00000.0008	C.000	C.43	0.19	0.14	0.004	0.004	0.00	0.00	0.00	1.43	6.02			9.50	0.00



TOWN	SITE	YR	BE	CD	CR	CU	FE	PB	MN	NI	ZN	V	NO4	SO4	NH4	NA	pH	BENZ
STRATFORD	005	73	0.00000.0024	C.004	C.007	0.52	0.27	0.90	0.004	0.005	0.17	0.01	2.67	5.69			8.62	
THOMASTON	003	73	0.00000.0025	C.004	C.009	0.32	0.35	0.71	0.008	0.009	0.61	0.03	1.11	4.03			7.16	4.38
TORLINGTON	001	73	0.00000.0021	C.009	C.005	0.40	0.60	1.07	0.016	0.017	0.22	0.07	1.83	5.22			7.60	3.81
VOLLINGTON	001	73	0.00000.0008	C.005	C.005	0.40	0.29	0.21	0.004	0.006	0.18	0.01	0.55	2.48			6.94	1.44
WATERBURY	001	73	0.00000.0046	C.020	C.020	0.54	0.80	1.63	0.014	0.027	0.45	0.09	1.48	17.44			8.10	0.00
WILLIMANTIC	001	73	0.00000.0005	C.007	C.007	0.33	0.39	0.86	0.010	0.008	0.19	0.09	0.73	3.24			6.55	0.97
WINCHESTER	001	73	0.00000.0010	C.007	C.007	0.45	0.44	0.74	0.009	0.010	0.18	0.03	0.83	4.94			6.89	2.83
ANSONIA	003	74	0.00000.0145	C.009	C.009	0.33	0.94	1.27	0.020	0.024	0.90	0.09	0.70	6.76			5.68	4.67
BERLIN	001	74	0.00000.0021	C.003	C.003	0.27	0.19	0.62	0.008	0.008	0.32	0.03	0.43	9.61			6.17	2.82
BRIDGEPORT	002	74	0.00000.0123	C.010	C.010	0.21	0.82	0.86	0.014	0.016	0.37	0.03	1.16	8.21			6.08	4.15
BRISTOL	001	74	0.00000.0370	C.003	C.003	0.62	0.44	0.55	0.011	0.013	0.49	0.03	0.62	8.91			6.06	3.14
BRISTOL	002	74	0.00000.0241	C.003	C.003	0.69	0.27	0.50	0.009	0.008	0.49	0.02	0.25	8.24			5.92	1.98
BRISTOL	003	74	0.00000.0076	C.003	C.003	0.57	0.39	0.89	0.010	0.013	0.46	0.03	0.81	11.99			5.70	3.29
BRISTOL	004	74	0.00000.0454	C.004	C.004	1.01	0.51	0.90	0.012	0.011	1.17	0.03	0.64	9.99			5.96	4.15
BURLINGTON	001	74	0.00000.0047	C.013	C.013	0.25	0.80	0.52	0.019	0.025	0.30	0.01	1.10	11.70			6.50	1.55
DANBURY	001	74	0.00000.0019	C.002	C.002	0.23	0.29	0.72	0.008	0.005	0.36	0.02	0.29	8.70			6.13	2.56
DANBURY	001	74	0.00000.0042	C.006	C.006	0.89	1.00	0.61	0.021	0.020	0.53	0.05	0.70	9.98			6.24	4.74
EAST HAMPTON	001	74	0.00000.0022	C.002	C.002	0.13	0.41	0.69	0.027	0.010	0.23	0.03	0.09	13.12			5.10	4.74
EAST HARTFORD	001	74	0.00000.0020	C.003	C.003	0.18	0.31	0.76	0.013	0.009	0.14	0.03	0.27	8.73			2.36	2.76
EAST HARTFORD	002	74	0.00000.0025	C.001	C.001	0.32	0.68	1.65	0.011	0.008	0.40	0.04	0.41	14.19			2.65	5.42
ENFIELD	001	74	0.00000.0011	C.002	C.002	0.26	0.56	0.75	0.011	0.012	0.21	0.03	0.71	7.63			2.73	3.53
FAIRFIELD	002	74	0.00000.0030	C.003	C.003	2.72	0.34	0.46	0.009	0.011	0.27	0.03	3.98	9.69			1.43	1.40
GREENWICH	001	74	0.00000.0026	C.003	C.003	0.22	0.67	1.46	0.013	0.005	0.25	0.02	0.95	7.97			5.58	3.75
GREENWICH	002	74	0.00000.0026	C.003	C.003	0.20	0.81	0.88	0.012	0.013	0.73	0.02	1.36	8.60			3.06	4.46
GREENWICH	003	74	0.00000.0027	C.004	C.004	0.16	0.81	1.18	0.012	0.011	0.23	0.02	1.66	10.37			2.51	4.47
GREENWICH	004	74	0.00000.0027	C.004	C.004	0.40	0.54	0.83	0.010	0.011	0.23	0.03	0.88	7.35			2.61	1.83
GREENWICH	007	74	0.00000.0020	C.001	C.001	0.14	0.43	0.60	0.010	0.007	0.18	0.03	1.29	8.91			2.34	6.15
GREENWICH	008	74	0.00000.0021	C.003	C.003	0.25	0.58	0.81	0.013	0.010	0.22	0.03	1.39	9.63			2.02	3.08
GREENWICH	014	74	0.00000.0033	C.007	C.007	0.22	0.78	0.98	0.022	0.019	1.08	0.03	1.80	13.03			3.98	4.48
GROTON	001	74	0.00000.0012	C.002	C.002	0.16	0.67	0.97	0.022	0.028	0.27	0.05	1.24	10.16			4.19	2.42
HADDAM	001	74	0.00000.0014	C.003	C.003	0.43	0.32	0.33	0.016	0.007	0.22	0.04	0.09	9.92			6.06	1.81
HADDAM	002	74	0.00000.0019	C.000	C.000	0.19	0.12	1.85	0.005	0.005	0.19	0.04	0.06	11.22			2.34	4.11
HARTFORD	003	74	0.00000.0028	C.006	C.006	0.16	1.34	1.07	0.023	0.033	0.39	0.04	3.31	9.91			4.51	6.00
HARTFORD	004	74	0.00000.0018	C.003	C.003	0.22	0.62	0.76	0.013	0.010	0.21	0.05	0.58	7.66			3.12	3.36
HARTFORD	005	74	0.00000.0031	C.002	C.002	0.12	0.55	0.88	0.013	0.011	0.20	0.05	1.39	9.27			2.64	1.50
JEWETT	001	74	0.00000.0016	C.003	C.003	0.27	0.46	0.87	0.009	0.008	0.28	0.03	0.70	7.44			9.32	5.86
LITCHFIELD	001	74	0.00000.0011	C.003	C.003	0.24	0.18	1.05	0.006	0.006	0.23	0.03	1.06	9.19			4.40	1.71
MANCHESTER	001	74	0.00000.0020	C.002	C.002	0.14	0.25	1.20	0.024	0.107	0.65	0.03	1.36	9.34			6.03	2.88
MANFIELD	001	74	0.00000.0028	C.002	C.002	0.30	0.49	0.46	0.012	0.008	0.28	0.04	1.89	8.77			4.31	3.58
MERIDEN	001	74	0.00000.0020	C.004	C.004	0.08	0.44	0.50	0.013	0.012	0.30	0.04	1.67	12.15			6.12	2.83
MERIDEN	002	74	0.00000.0034	C.004	C.004	0.22	0.62	1.02	0.013	0.017	0.35	0.03	1.38	8.42			3.64	2.41
MERIDEN	003	74	0.00000.0044	C.003	C.003	0.15	0.69	0.85	0.026	0.021	0.61	0.04	1.21	8.56			4.94	3.72
MERIDEN	005	74	0.00000.0118	C.005	C.005	0.21	0.92	1.01	0.028	0.027	1.76	0.03	1.89	8.97			4.17	4.15
MERIDEN	006	74	0.00000.0024	C.008	C.008	0.45	0.96	0.83	0.022	0.032	2.68	0.03	1.36	7.35			3.89	2.81
MIDDLETOWN	001	74	0.00000.0019	C.004	C.004	0.08	0.44	0.50	0.010	0.014	0.28	0.04	1.89	8.77			4.31	3.58
MIDDLETOWN	003	74	0.00000.0024	C.004	C.004	0.61	0.71	0.85	0.016	0.013	0.33	0.04	1.43	8.50			6.12	2.83
MIDDLETOWN	004	74	0.00000.0019	C.003	C.003	0.14	0.32	0.23	0.017	0.015	0.38	0.04	0.50	12.27			4.94	3.72
MILFORD	001	74	0.00000.0034	C.002	C.002	0.14	0.65	1.16	0.013	0.019	0.41	0.04	2.14	10.13			5.93	4.15
MILFORD	002	74	0.00000.0028	C.005	C.005	0.17	0.85	1.16	0.012	0.024	0.39	0.04	1.83	8.61			6.23	2.81
MILFORD	006	74	0.00000.0030	C.002	C.002	0.05	0.49	0.58	0.010	0.018	0.34	0.04	1.80	8.76			6.25	3.68
MILFORD	007	74	0.00000.0033	C.002	C.002	0.42	0.55	0.54	0.014	0.015	0.26	0.05	0.10	11.06			5.78	3.23
MORRIS	001	74	0.00000.0009	C.000	C.000	0.42	0.40	0.23	0.009	0.009	0.03	0.01	1.11	1.35			7.70	2.83
NAUGATUCK	001	74	0.00000.0046	C.004	C.004	0.17	1.42	1.32	0.018	0.014	0.49	0.04	1.57	7.48			3.35	3.81
NEW BRITAIN	001	74	0.00000.0027	C.002	C.002	0.06	0.75	0.82	0.017	0.011	0.15	0.03	1.90	7.44			1.84	3.39
NEW BRITAIN	002	74	0.00000.0031	C.004	C.004	0.16	1.22	1.02	0.029	0.013	0.15	0.04	1.53	6.42			1.30	4.67
NEW BRITAIN	003	74	0.00000.0053	C.002	C.002	0.16	1.24	1.45	0.024	0.011	0.19	0.04	1.60	6.52			2.36	4.62
NEW BRITAIN	004	74	0.00000.0022	C.004	C.004	0.24	0.76	0.95	0.021	0.018	0.23	0.04	2.52	8.85			2.87	4.74
NEW BRITAIN	005	74	0.00000.0022	C.002	C.002	0.21	0.45	0.79	0.013	0.010	0.14	0.04	1.26	9.06			1.44	2.94

TOWN	SITE YR	BE	CD	CR	CU	FE	PB	MN	NI	ZN	V	NO4	SO4	NH4	NA	pH	BENZ
NEW HAVEN	002	74	0.00000.0022	C.007	0.13	0.90	1.06	0.023	0.022	0.26	0.06	0.76	8.16	0.45	2.60	5.73	3.44
NEW HAVEN	003	74	0.00000.0036	C.002	0.07	0.87	0.75	0.024	0.021	0.34	0.05	0.84	10.64	0.38	5.79	6.32	3.00
NEW HAVEN	005	74	0.00000.0029	C.005	0.08	0.95	0.93	0.017	0.016	0.25	0.06	0.98	10.47	0.38	4.37	5.97	3.04
NEW HAVEN	009	74	0.00010.0021	C.003	0.12	0.68	1.15	0.014	0.023	0.24	0.08	2.31	7.91	0.23	3.73	5.94	3.73
NORTH CANAAN	001	74	0.00000.0010	C.004	0.17	0.50	0.27	0.013	0.005	0.13	0.03	1.28	7.35	0.31	4.01	6.19	4.93
NORWALK	001	74	0.00020.0039	C.006	0.22	0.91	1.06	0.017	0.015	0.38	0.06	1.59	13.18	0.44	3.77	6.09	5.96
NORWALK	005	74	0.00020.0035	C.004	0.17	1.31	1.40	0.024	0.012	0.11	0.04	2.72	11.28	0.32	4.27	5.89	4.05
NORWICH	001	74	0.00000.0008	C.003	0.21	0.67	0.79	0.015	0.013	0.11	0.04	1.27	10.83	0.36	5.69	6.34	3.99
OLD SAYBROCK	001	74	0.00000.0015	C.006	0.33	0.75	1.58	0.013	0.010	0.30	0.04	0.84	10.71	0.35	3.73	6.00	12.81
OLD SAYBROCK	002	74	0.00000.0012	C.006	0.12	2.50	1.17	0.027	0.018	0.28	0.01	1.81	6.78	0.20	4.77	6.90	3.73
ORANGE	001	74	0.00000.0030	C.001	1.11	0.20	0.23	0.011	0.008	0.28	0.03	0.00	11.95	0.23	3.67	6.33	3.23
ORANGE	003	74	0.00000.0024	C.003	0.04	1.12	0.53	0.022	0.013	0.23	0.03	1.10	7.73	0.33	3.75	5.71	2.31
PUTNAM	002	74	0.00000.0008	C.003	0.15	0.47	0.45	0.010	0.009	0.11	0.03	0.76	9.76	0.33	3.07	6.05	3.78
STAMFORD	001	74	0.00010.0026	C.005	0.41	1.20	1.01	0.021	0.012	0.26	0.05	1.79	12.53	0.28	4.88	5.92	3.73
STAMFORD	003	74	0.00010.0053	C.005	0.12	0.65	1.00	0.012	0.009	0.25	0.05	2.65	8.89	0.28	4.88	5.92	3.36
STAMFORD	004	74	0.00010.0058	C.004	0.36	0.53	0.78	0.011	0.012	0.19	0.03	2.10	7.42	0.36	5.75	6.07	1.02
STAMFORD	007	74	0.00000.0051	C.010	0.21	2.62	1.07	0.042	0.019	0.28	0.08	3.40	14.55	0.38	0.95	5.90	0.00
STAMFORD	010	74	0.00000.0048	C.011	0.37	2.51	1.68	0.048	0.051	0.42	0.02	4.06	14.55	0.28	5.58	6.27	4.43
STAMFORD	017	74	0.00010.0048	C.010	0.32	4.04	0.99	0.053	0.023	0.52	0.05	2.81	13.76	0.28	5.81	6.75	3.49
STRAITFORD	001	74	0.00000.0048	C.004	0.39	0.58	0.70	0.016	0.016	0.33	0.04	1.70	9.01	0.21	5.81	6.75	2.72
STRAITFORD	005	74	0.00000.0037	C.006	0.41	0.97	1.11	0.018	0.027	0.30	0.07	1.41	10.89	0.28	6.07	6.79	3.13
THOMASTON	003	74	0.00000.0025	C.007	0.46	0.67	0.78	0.012	0.015	0.59	0.05	0.91	8.18	0.31	3.84	6.38	3.94
TORRINGTON	001	74	0.00010.0014	C.006	0.19	0.81	1.43	0.018	0.017	0.36	0.05	1.11	9.86	0.39	6.34	6.40	1.94
VOLUNTTOWN	001	74	0.00000.0009	C.004	0.16	0.40	0.18	0.018	0.008	0.27	0.02	0.87	4.78	0.23	6.04	6.50	4.26
WATERBURY	002	74	0.00000.0058	C.010	0.26	1.20	1.40	0.017	0.020	0.60	0.05	1.03	11.86	0.59	1.67	56.44	4.26
WATERBURY	001	74	0.00000.0012	C.003	0.57	0.50	0.34	0.019	0.005	0.25	0.03	0.48	6.39	0.31	5.03	6.10	2.28
WINCHESTER	001	74	0.00000.0011	C.003	0.40	0.63	0.90	0.015	0.008	0.21	0.03	0.74	9.24	0.37	4.47	6.36	3.28

WINDHAM	001	74	0.00000.0009	C.003	0.22	0.50	0.65	0.010	0.008	0.24	0.03	0.47	4.68	0.34	5.01	6.44	2.66
ANSANIA	003	75	0.00000.0159	C.006	0.26	0.89	1.32	0.014	0.019	0.72	0.03	3.38	9.16	0.72	8.15	7.87	4.55
BERLIN	001	75	0.00000.0020	C.005	0.14	0.31	0.46	0.008	0.008	0.17	0.02	2.75	8.66	0.32	6.84	8.04	1.52
BRIDGEPORT	002	75	0.00000.0056	C.013	0.19	0.74	1.25	0.023	0.021	0.28	0.04	0.80	9.30	0.52	3.85	6.70	5.38
BRIDGEPORT	123	75	0.00000.0042	C.004	0.09	0.96	1.35	0.014	0.018	0.30	0.03	6.02	12.06	0.11	11.66	8.30	3.66
BRISTOL	001	75	0.00000.0027	C.006	0.09	0.86	0.85	0.015	0.011	0.34	0.03	1.64	10.21	0.51	4.77	6.18	5.59
BRISTOL	002	75	0.00000.0041	C.004	0.55	0.45	0.40	0.008	0.005	0.19	0.03	0.52	4.84	0.41	1.14	6.60	2.43
BRISTOL	003	75	0.00000.0047	C.009	0.74	0.89	0.55	0.019	0.003	0.15	0.03	0.63	9.06	0.56	4.47	6.40	4.57
BRISTOL	004	75	0.00000.0090	C.005	0.29	0.77	1.68	0.013	0.010	0.98	0.03	1.30	8.41	0.48	4.19	6.16	4.74
BURLINGTON	001	75	0.00000.0013	C.001	0.11	0.23	0.28	0.005	0.003	0.20	0.02	1.43	8.73	0.24	11.05	6.90	2.03
BURLINGTON	001	75	0.00000.0008	C.003	0.25	1.09	1.42	0.013	0.012	0.14	0.03	1.53	8.66	0.65	3.08	6.50	3.23
DANBURY	123	75	0.00000.0020	C.001	0.18	0.72	1.16	0.011	0.007	0.12	0.02	2.23	11.10	0.29	7.92	7.66	7.91
DERBY	123	75	0.00000.0029	C.002	0.15	1.12	1.30	0.014	0.010	0.18	0.02	3.13	10.12	0.24	11.84	9.30	3.92
EAST HARTFORD	001	75	0.00000.0023	C.005	0.15	0.65	1.15	0.011	0.010	0.19	0.02	3.02	8.62	0.31	5.38	7.43	7.90
EAST HARTFORD	002	75	0.00000.0027	C.003	0.15	0.63	1.17	0.011	0.015	0.25	0.02	2.95	10.16	0.42	7.20	7.39	3.11
EAST HARTFORD	001	75	0.00000.0026	C.003	0.29	0.59	1.16	0.011	0.012	0.16	0.02	2.28	10.00	0.22	7.01	8.38	1.62
ENFIELD	001	75	0.00000.0016	C.002	0.18	0.88	1.23	0.018	0.015	0.46	0.06	1.76	5.78	0.59	5.84	6.50	4.81
ENFIELD	123	75	0.00000.0023	C.003	0.25	0.46	0.88	0.009	0.009	0.18	0.02	4.17	9.52	0.29	4.56	7.79	2.16
FAIRFIELD	002	75	0.00000.0042	C.003	0.30	0.61	0.57	0.012	0.013	0.50	0.03	3.67	9.29	0.32	8.46	7.70	2.14
GREENWICH	001	75	0.00000.0033	C.004	0.13	0.54	1.05	0.010	0.011	0.25	0.02	3.48	9.63	0.28	6.42	8.39	1.76
GREENWICH	002	75	0.00000.0030	C.003	0.11	0.67	1.16	0.012	0.010	0.30	0.03	4.56	12.25	0.29	7.85	7.66	3.34
GREENWICH	003	75	0.00000.0028	C.003	0.14	0.72	1.21	0.012	0.009	0.32	0.02	3.48	12.34	0.25	8.44	7.62	3.14
GREENWICH	004	75	0.00000.0028	C.003	0.23	0.58	0.76	0.012	0.009	0.28	0.02	4.08	12.30	0.25	6.98	7.54	2.60
GREENWICH	007	75	0.00000.0047	C.002	0.09	0.72	0.70	0.014	0.012	0.28	0.03	1.70	1.26	0.36	0.00	7.20	3.34
GREENWICH	008	75	0.00000.0028	C.004	0.18	0.92	1.11	0.015	0.010	0.30	0.02	3.90	12.16	0.34	9.17	7.66	3.45
GREENWICH	014	75	0.00000.0035	C.002	0.15	0.77	1.11	0.015	0.011	0.45	0.03	4.04	9.93	0.45	4.17	7.35	5.38
GROTON	001	75	0.00000.0018	C.006	0.05	0.61	0.81	0.010	0.016	2.82	0.04	1.19	8.50	0.53	5.96	7.40	3.70
GROTON	123	75	0.00000.0024	C.006	0.18	0.53	0.61	0.015	0.019	0.25	0.02	5.85	10.83	0.16	6.35	9.12	3.77
HADDAM	002	75	0.00000.0023	C.003	0.16	0.49	0.44	0.010	0.009	0.73	0.02	3.47	6.82	0.17	6.04	8.61	2.53
HARTFORD	002	75	0.00000.0015	C.004	0.25	0.65	0.58	0.010	0.018	0.12	0.03	5.33	10.26	0.22	6.27	7.50	3.00
HARTFORD	003	75	0.00000.0027	C.006	0.29	1.40	1.90	0.016	0.015	0.25	0.04	3.34	9.97	0.34	8.39	8.56	4.17

TOWN	SITE	YR	BE	CD	CR	CU	FE	PB	MN	NI	ZN	V	NO4	SO4	NH4	NA	PH	BENZ
HARIFORD	004	75	0.0000	CC23	C.CC3	C.17	0.74	1.21	0.012	0.009	0.19	U.J2	4.54	8.75	0.75	5.43	8.45	7.07
HARIFORD	005	75	0.0000	CC24	C.CC4	C.09	0.75	1.21	0.012	0.013	0.21	U.J3	4.36	8.13	0.77	7.58	8.57	6.22
KENT	001	75	0.0000	CC13	C.CC3	C.47	0.43	0.23	0.009	0.007	0.17	U.J1	2.18	7.04	0.32	6.50	8.55	1.55
LICH CTY (MORRIS)	001	75	0.0000	CC19	C.CC3	C.14	0.39	0.36	0.008	0.007	0.09	U.J2	0.27	6.62	0.31	0.20	6.99	2.59
MANCHESTER	001	75	0.0000	CC15	C.CC2	C.21	0.57	0.83	0.012	0.008	0.16	U.J2	1.98	9.68	0.41	6.20	8.30	2.73
MANCHESTER	001	75	0.0000	CC16	C.CC2	C.13	0.44	0.37	0.007	0.005	0.71	U.J2	3.70	11.75	0.27	7.40	8.93	0.91
MERIDEN	001	75	0.0000	CC26	C.CC4	C.47	1.12	1.50	0.018	0.011	0.26	U.J3	2.40	8.96	0.51	3.44	6.84	3.63
MERIDEN	002	75	0.0000	CC20	C.CC5	C.30	0.98	1.19	0.017	0.024	1.53	U.J3	3.42	10.36	0.29	4.63	8.11	3.32
MERIDEN	003	75	0.0000	CC33	C.CC7	C.16	1.60	1.36	0.030	0.015	0.45	U.J4	3.53	11.03	0.45	2.90	6.61	7.26
MERIDEN	005	75	0.0000	CC24	C.CC8	C.25	1.17	1.06	0.022	0.035	8.26	U.J3	3.52	8.00	0.32	4.43	6.80	4.15
MFR IDEN	006	75	0.0000	CC25	C.CC12	C.48	1.40	0.84	0.023	0.015	0.26	U.J3	4.92	9.56	0.40	4.10	7.58	4.71
MIDDLETOWN	001	75	0.0000	CC08	C.CC7	C.07	0.92	0.34	0.023	0.009	0.33	U.J3	0.18	1.96	0.28	1.24	6.80	0.00
MIDDLETOWN	003	75	0.0000	CC23	C.CC5	C.14	0.73	0.96	0.015	0.010	0.18	U.J2	3.55	5.19	0.28	6.68	7.75	3.59
MIDDLETOWN	003	75	0.0000	CC30	C.CC6	C.11	0.64	0.84	0.011	0.015	0.25	U.J2	3.20	7.66	0.28	7.27	8.59	4.12
MILFORD	002	75	0.0000	CC33	C.CC7	C.21	1.06	1.15	0.016	0.021	0.35	U.J3	2.09	9.20	0.24	8.02	8.50	3.74
MILFORD	006	75	0.0000	CC27	C.CC6	C.10	0.61	0.69	0.010	0.013	0.23	U.J3	2.41	8.37	0.28	7.77	8.49	1.95
NAUGATUCK	001	75	0.0000	CC10	C.CC7	C.09	1.45	1.23	0.020	0.013	0.39	U.J2	2.09	7.67	0.39	7.93	8.57	4.78
NEW BRITAIN	001	75	0.0000	CC18	C.CC4	C.06	1.69	1.54	0.028	0.019	0.15	U.J3	1.37	5.42	0.34	4.42	6.70	8.89
NEW BRITAIN	002	75	0.0000	CC21	C.CC3	C.05	1.32	1.54	0.020	0.013	0.21	U.J2	2.26	9.07	0.19	7.24	8.63	4.77
NEW BRITAIN	003	75	0.0000	CC21	C.CC4	C.20	1.43	1.56	0.019	0.009	0.17	U.J2	1.05	10.44	0.17	6.75	8.62	3.32
NEW BRITAIN	004	75	0.0000	CC24	C.CC3	C.12	0.57	0.86	0.012	0.011	0.17	U.J2	1.51	10.34	0.20	7.33	8.51	3.69
NEW BRITAIN	005	75	0.0000	CC18	C.CC6	C.17	0.70	1.12	0.012	0.012	0.20	U.J4	0.99	4.66	0.43	2.87	7.00	4.10
NEW BRITAIN	123	75	0.0000	CC23	C.CC8	C.12	0.84	1.24	0.017	0.009	0.16	U.J1	1.84	11.51	0.72	8.86	9.10	3.47
NEW HAVEN	002	75	0.0000	CC30	C.CC5	C.21	1.21	1.19	0.016	0.016	0.17	U.J3	2.53	13.44	0.13	9.42	9.19	3.53
NEW HAVEN	003	75	0.0000	CC25	C.CC4	C.09	0.75	0.75	0.014	0.010	0.21	U.J2	2.44	12.52	0.20	6.05	8.60	4.26
NEW HAVEN	005	75	0.0000	CC26	C.CC2	C.23	0.73	0.86	0.011	0.013	0.16	U.J3	1.89	8.23	0.30	5.65	8.55	3.30
NEW HAVEN	009	75	0.0000	CC25	C.CC4	C.13	0.88	1.01	0.014	0.016	0.24	U.J6	1.91	10.18	0.35	6.78	8.09	2.54
NEW HAVEN	001	75	0.0000	CC15	C.CC2	C.21	0.57	0.28	0.012	0.004	0.12	U.J1	1.37	9.44	0.31	7.21	8.32	2.10
NORTH CANAAN	001	75	0.0000	CC28	C.CC2	C.16	0.74	0.96	0.012	0.010	1.34	U.J2	1.40	11.31	0.31	4.04	7.96	3.37
NORWALK	005	75	0.0000	CC25	C.CC5	C.13	0.69	1.19	0.011	0.007	0.19	U.J2	1.07	8.85	0.36	3.38	8.09	3.75
NORWICH	001	75	0.0000	CC12	C.CC5	C.12	0.65	1.03	0.014	0.020	0.35	U.J3	1.90	7.82	0.37	4.18	8.47	3.84
OLD SAYBROCK	001	75	0.0000	CC16	C.CC2	C.22	0.84	1.19	0.010	0.006	0.91	U.J1	1.26	7.89	0.25	6.90	7.14	3.27
PUTNAM	002	75	0.0000	CC19	C.CC3	C.C7	0.54	0.47	0.008	0.007	0.37	U.J1	2.89	5.51	0.22	3.81	8.39	2.40
STAMFORD	001	75	0.0000	CC29	C.CC4	C.17	0.74	1.12	0.011	0.012	0.21	U.J3	3.40	7.79	0.23	4.83	8.45	2.69
STAMFORD	003	75	0.0000	CC29	C.CC3	C.19	0.66	1.15	0.010	0.014	0.19	U.J3	3.59	10.76	0.45	5.88	7.98	3.75
STAMFORD	004	75	0.0000	CC27	C.CC4	C.14	0.46	0.86	0.008	0.014	0.17	U.J2	1.93	8.58	0.72	5.30	8.19	3.09
STAMFORD	007	75	0.0000	CC37	C.CC5	C.13	1.73	0.90	0.031	0.016	0.37	U.J2	2.05	10.59	0.24	5.65	8.35	2.98
STRAITFORD	001	75	0.0000	CC70	C.CC2	C.23	0.56	0.89	0.010	0.013	0.29	U.J3	3.48	11.00	0.34	7.01	8.03	2.49
STRAITFORD	005	75	0.0000	CC27	C.CC5	C.13	0.61	1.20	0.010	0.022	0.24	U.J3	4.66	10.65	0.25	7.77	8.70	4.10
THOMASTON	003	75	0.0000	CC20	C.CC3	C.47	0.60	0.80	0.008	0.007	0.23	U.J2	1.62	10.31	0.11	4.48	7.47	2.92
TORRINGTON	001	75	0.0000	CC13	C.CC6	C.23	1.17	2.43	0.021	0.014	0.27	U.J4	2.79	11.90	0.41	5.16	8.25	4.13
TORRINGTON	123	75	0.0000	CC19	C.CC2	C.26	0.59	1.16	0.012	0.008	0.14	U.J1	1.14	7.92	0.08	6.79	9.05	3.99
VOLUNTTOWN	001	75	0.0000	CC13	C.CC4	C.20	0.33	0.25	0.005	0.005	1.11	U.J1	0.98	9.31	0.19	5.10	7.77	2.24
WALLINGFORD	001	75	0.0000	CC22	C.CC1	C.C4	0.50	1.24	0.009	0.010	0.14	U.J2	1.65	10.77	0.10	9.26	9.11	3.85
WATERBURY	002	75	0.0000	CC55	C.CC14	C.26	1.18	1.22	0.017	0.018	0.70	U.J2	3.45	8.60	0.21	6.39	8.08	3.02
WATERBURY	003	75	0.0000	CC88	C.CC5	C.09	0.80	1.25	0.014	0.010	0.30	U.J2	1.42	8.97	0.16	5.72	8.72	3.87
WATERFORD	001	75	0.0000	CC13	C.CC2	C.21	0.35	0.36	0.008	0.008	1.04	U.J1	0.91	8.21	0.21	5.99	8.92	2.21
WILLMANTIC	001	75	0.0000	CC20	C.CC2	C.19	1.13	0.66	0.010	0.007	2.43	U.J1	1.15	9.15	0.31	7.28	8.31	2.57
WINCHESTER	001	75	0.0000	CC16	C.CC3	C.14	0.67	0.87	0.010	0.008	0.10	U.J2	1.65	10.75	0.32	7.22	8.56	2.91

## PUBLICATIONS

The following is a partial listing of technical papers and study reports dealing with various aspects of Connecticut air pollutant levels and air quality data.

1. "Particulate Matter Transport", Bruckman, December, 1976.
2. "An Investigation of Long-Range Transport of Ozone Across the Midwestern and Northeastern U.S.", Wolff, Lioy, Wight, Meyers, Cederwall, December, 1976.
3. "Transport of Ozone Associated with an Air Mass", Wolff, Lioy, Wight, Meyers, Cederwall, March, 1977.
4. "High Volume Sampling: Errors Incurred During Passive Sampling Exposure Periods", Bruckman, Rubino, September, 1976.
5. "Asbestos and Mesothelioma Incidence in Connecticut", Bruckman, Rubino, Christine, February, 1977.
6. "A Comparison of Low Volume and High Volume Particulate Sampling", Bruckman, Hyne, Keever, 1976.
7. "Data Validation and Monitoring Site Review", (part of the Air Quality Maintenance Planning Process), June 15, 1976.
8. "Air Quality Data Analysis", (part of the Air Quality Maintenance Planning Process), August 16, 1976.
9. "Monitored Asbestos Concentrations in Connecticut", Bruckman, Rubino, March, 1977.

### VIII. CLIMATOLOGICAL DATA

Meteorology is often the most significant factor influencing short-term changes in air quality and also has an effect on long-term trends.

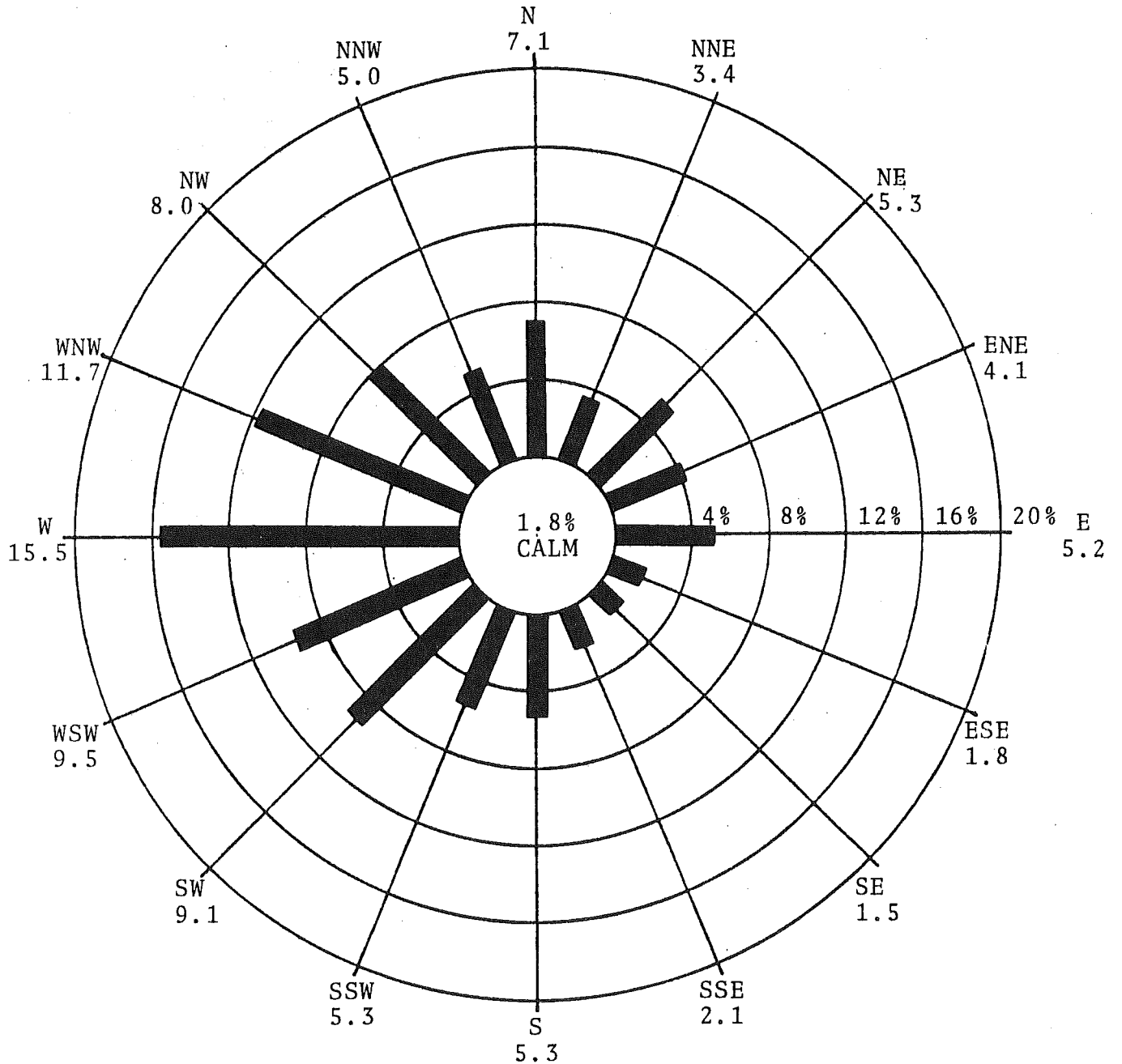
For example, motor vehicle emission control programs have a long-term effect on photochemical oxidant and carbon monoxide levels, but large year-to-year changes are more likely attributable to meteorological differences than to emission changes.

Windroses for Bradley Airport near Hartford and Sikorsky Airport in Stratford have been developed from 1976 National Weather Service surface observations and are shown in the following figures.

The Bradley Airport Windrose for 1976 shows some departures from normal: southerly winds occurred 18.8% of the time as compared to a normal of 15.4%; northerly 10.6% compared to normal 14.8%; northwesterly 12.5% compared to normal 9.7%.

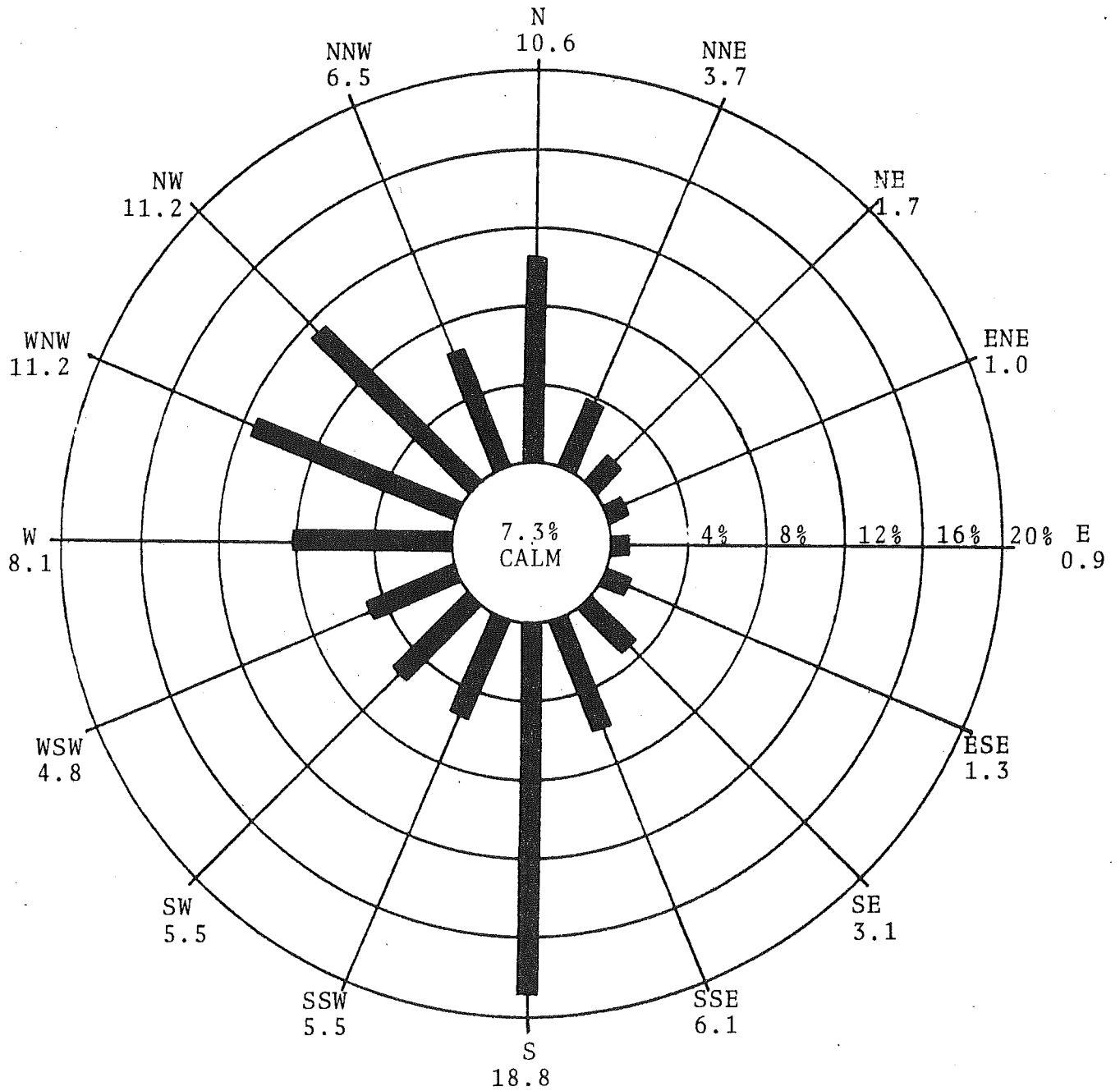
The Sikorsky Airport Windrose for 1976 also exhibits some abnormalities: westerly winds occurred 15.5% of the time in 1976 as compared to a normal of 9.8%; southwesterly winds occurred 9.1% of the time compared to a normal of 7.9%, west northwesterly 11.7% compared to 9.1% normally.

Figure 9



WIND ROSE  
 SIKORSKY MEMORIAL AIRPORT  
 ANNUAL 1976  
 WIND FREQUENCY APPEARS BENEATH EACH DIRECTIONAL ABBREVIATION  
 (Calms are distributed over all directions)

Figure 10



WIND ROSE  
BRADLEY INTERNATIONAL AIRPORT  
ANNUAL 1976

WIND FREQUENCY APPEARS BENEATH EACH DIRECTIONAL ABBREVIATION  
(Calms are distributed over all directions)

