CONNECTICUT AIR QUALITY SUMMARY 1974

CONNECTICUT

DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OFFICE BUILDING HARTFORD, CONNECTICUT 06115

Dear Friend:

The DEP's Connecticut Air Quality Summary, 1974, is the second annual compilation of data on air pollutant levels in Connecticut. I hope the summary will be of use to any citizen or group interested in Connecticut's air pollutant levels and the trends of those levels from one year to the next.

The progress that has been made in cleaning Connecticut's air has been the result of cooperative efforts of state and municipal agencies, the industrial community and private citizens. I appreciate the part each individual has played in our air pollution control efforts.

The Summary indicates that more work is to be done in some areas. I urge you to keep up your concern for Connecticut's air quality and to participate with us in continuing efforts to attain and maintain clean, healthful air.

Sincerely yours,

Joseph N. Gill

Joseph N. Gill
Commissioner

CONNECTICUT AIR QUALITY SUMMARY
1974

TABLE OF CONTENTS

I. INTRODUCTION

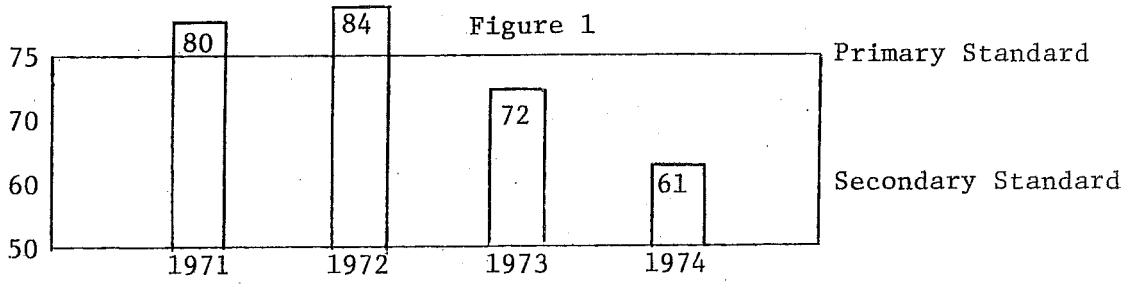
A. This summary of 1974 ambient air quality levels in Connecticut is a compilation of all air pollutant measurements made at permanent DEP and municipal sampling sites in Connecticut.

B. Trends SO_2 and Particulates:

The long term trend of Set I pollutant (sulfur dioxide and particulate matter) concentrations in Connecticut has been downward since the formation of DEP. This trend can be seen in the average of annual mean concentrations for one site in each of five cities from 1971 through 1974.

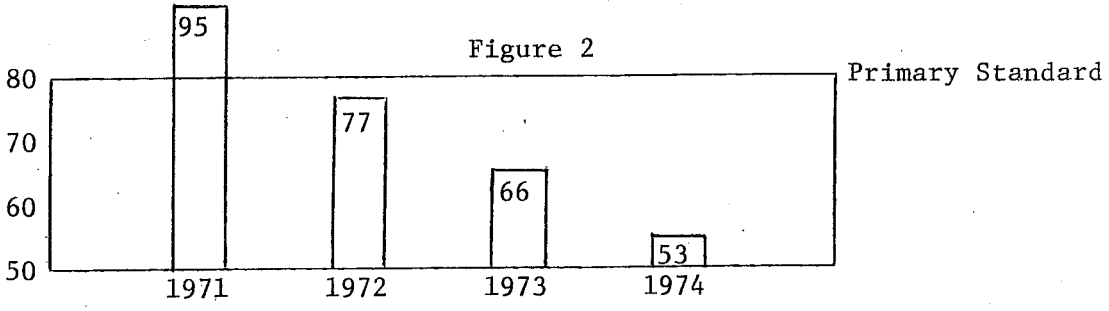
TOTAL SUSPENDED PARTICULATE MATTER

Annual Geometric Mean ($\mu g/m^3$) Average for
Bridgeport, Stamford, New Haven, Waterbury, Hartford



SULFUR DIOXIDE

Annual Arithmetic Mean ($\mu g/m^3$) Average for
Bridgeport, Stamford, New Haven, Waterbury, Hartford



C. As in past years, the network of measuring devices underwent some minor refinement in 1974. Further refinements are expected in 1975. For 1974, the network consisted of:

73 Total Suspended Particulate sites
15 Sulfur Oxides sites
14 Ozone sites
39 Nitrogen Oxide sites
7 Carbon Monoxide sites

A complete description of all permanent air monitoring sites in Connecticut operated by DEP and Northeast Utilities in 1974 is available from The Department of Environmental Protection, Air Compliance, State Office Building, Hartford, Connecticut 06115.

D. The following table lists analysis methods and National Ambient Air Quality Standards (NAAQS) for each pollutant. The NAAQS are established by the federal EPA and are divided into two categories: primary, set to protect public health, and secondary, set 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.

*Data presented in this report includes, as well, eight SO_2 sites operated by Northeast Utilities, for a total of 23.

TABLE I

ASSESSMENT OF AMBIENT AIR QUALITY

POLLUTANT	METHOD OF ANALYSIS: SAMPLING PERIOD	METHOD OF ANALYSIS: DATA REDUCTION	NATIONAL AMBIENT AIR STANDARDS: STATISTICAL BASE	PRIMARY STANDARD		SECONDARY STANDARD	
				$\mu g/m^3$	ppm	$\mu g/m^3$	ppm
Total Suspended Particulates	24 Hour	24 Hour Average	Annual Geometric Mean	75		60[1]	
			24 Hour Concentration*	260		150	
Sulfur Oxides (Measured as Sulfur Dioxide)	Continuous	1 Hour Average	Annual Arithmetic Mean	80	.03		
			24 Hour Average Concentration*	365	.14		
			3 Hour Average Concentration*			1300	.5
Nitrogen Dioxide	24 Hour	24 Hour Average	Annual Arithmetic Mean	100	.05	Same as Primary	
Photochemical Oxidants	Continuous	1 Hour Average	1 Hour Average*	160	.08	Same as Primary	
Hydrocarbons	Continuous	1 Hour Average	3 Hour Average* (6-9 A.M.)	160[2]	.24	Same as Primary	
				mg/m^3	ppm	mg/m^3	ppm
Carbon Monoxide	Continuous	1 Hour Average	8 Hour Average*	10	9	Same as Primary	
			1 Hour Average*	40	35	Same as Primary	

*Not to be exceeded more than once per year.

[1]A guide to be used in assessing implementation plans to achieve the 24-hour standard.
[2]For use as a guide in devising implementation plans to achieve oxidant standards.

Units: $\mu g/m^3$ = Micrograms per cubic meter
mg/m^3 = Milligrams per cubic meter
ppm = parts per million

II. AEROMETRIC DATA

A. Total Suspended Particulates

I. Conclusions:

Total suspended particulate levels in Connecticut show a general trend toward air quality improvement in 1974 over 1973 (See Table II). The present report includes actual geometric means and geometric standard deviations in contrast to the 1971-1973 report which utilized arithmetic means and a statistical approximation of the geometric standard deviations.

The annual geometric means were lower in 1974 showing improvement over 1973 at 38 sites, with 26 of these decreases being greater than 5 $\mu g/m^3$. The means at 25 sites showed increases in 1974 over 1973, but at only 6 of these did the increase exceed 5 $\mu g/m^3$. The primary annual standard was not exceeded during 1974 at any site, while the following sites exceeded the standard in 1973:

Hartford	03	Stamford	04
New Britain	02	Waterbury	01
Stamford	01		

The secondary annual standard was exceeded at 12 sites in 1973 and also at 12 sites in 1974.

II. Discussion of data:

There were 73 Total Suspended Particulate sites in 1974 compared to 65 in 1973.

The Particulate Report in Table II provides a means to statistically predict the number of days in a year in which the 24-hour standards would be exceeded. Table II is the product of a computer program which calculates the percent of days that have 24-hour averages over a standard based upon statistical parameters of the data distribution. The secondary National Ambient Air Quality Standard is 150 $\mu g/m^3$. The primary is 260 $\mu g/m^3$. The results are based on the assumption that the particulate data are lognormally distributed, as are the geometric means and the standards based on them. A percent of greater than .548 indicates two or more days per year over the standard. (Two days is equivalent to .548% of the days in a year). A review of Table II shows 8 sites over .548% in 1973 for the primary standard, and 6 over in 1974. Forty-three sites exceed this % for the secondary standard in 1973 and 52 do so in 1974.

Particulate samples are taken only every sixth day, so many days with high levels may not be sampling days. Mathematical probabilities show that at least twelve days in a year must exceed the standard before there is a 60% chance the sampling schedule will hit two of them.*

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*Twenty six days must exceed the standard before there is a 95% probability the sampling schedule will hit two of them. Twenty six days are equivalent to 7.12% of the year.

Twelve days are equivalent to 3.29% of the days in a year. Under these criteria no two days over the primary standard are likely to have been observed in 1974 at any site. Two days over the secondary standard were likely to have been measured at 14 sites. The actual data for 1974 (Table III) bears out the theory, showing no sites over the primary standard and 14 over the secondary. Of these, 12 are the same ones as those predicted. Naugatuck 01 and New Haven 02 did not exceed the secondary standard as expected and New Britain 05 and Torrington 01 did.

III. Facts about Total Suspended Particulates:

The major sources of particulate matter found in the air are power generation and heating fuel combustion, motor vehicle exhaust and tire wear, and a variety of industrial process sources.

Particulate matter reduces insolation (solar radiation reaching the land surface), reduces visibility, soils clothing and accelerates the corrosion of building materials and paints. In addition particulate matter of the size collected on High Volume Air Samplers is known to enter and be retained in the human respiratory system. Some particulate substances such as lead are intrinsically toxic, others may cause or contribute to respiratory ailments, still others are known carcinogens (cancer-causing).

IV. Method of Collection:

Total Suspended Particulate levels are obtained from High Volume Samplers. These "Hi Vols" resemble vacuum cleaners in their operation, with a large 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 type. 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 (μg) divided by the volume of air in cubic meters (m^3) yields the pollutant concentration for the day, in micrograms per cubic meter.

The terms explained here are column headings on Table II which follows:

TOWN	SITE	YEAR	NUMBER OF SAMPLES	GEOM MEAN	STD GEOM DEV	PCT OVER 150 $\mu g/m^3$	PCT OVER 260 $\mu g/m^3$
Town Name	Site Number Assigned by D.E.P.	Calendar Year	The number of 24 hour samples collected and analyzed. The usual maximum number for sixth day sampling is 61 per year.	Annual Geometric Mean	Geometric Standard Deviation	Percent of days that could be expected to have concentrations above 150 $\mu g/m^3$ if samples were taken every day instead of every sixth day.	Percent of days that could be expected to have concentrations above 260 $\mu g/m^3$ if samples were taken every day instead of every sixth day.

T/ 1 II

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLLUTANT-- PARTICULATES DISTRIBUTION-- LOGNORMAL

TOWN	SITE	YEAR	NUM.OF SAMPLES	GEOM MEAN	STD GEOM DEV	PERCENT OVER 150 UG/M3	PERCENT OVER 260 UG/M3
ANSONIA	003	73	55	58.9	1.7070	4.4599	.2599
ANSONIA	003	74	51	56.4	1.6140	2.2699	.0699
BERLIN	001	73	56	38.8	1.5570	.0999	.0000
BERLIN	001	74	56	31.8	1.7220	.1899	.0000
BRIDGEPORT	001	73	59	45.4	1.4660	.0999	.0000
BRIDGEPORT	001	74	61	48.1	1.5840	.6199	.0099
BRIDGEPORT	002	73	60	57.2	1.5310	1.0699	.0199
BRIDGEPORT	002	74	61	45.7	1.6590	1.0699	.0299
BRISTOL	001	73	58	52.5	1.5720	1.0699	.0199
BRISTOL	001	74	59	42.3	1.6380	.4699	.0099
BRISTOL	002	73	19	28.2	1.5830	.0199	.0000
BRISTOL	002	74	61	29.4	1.6950	.0999	.0000
BRISTOL	003	73	18	40.1	1.5840	.1899	.0000
BRISTOL	003	74	59	35.2	1.6530	.1899	.0000
BRISTOL	004	73	18	50.3	1.7330	2.2699	.1299
BRISTOL	004	74	59	48.9	1.6070	.8199	.0199
BURLINGTON	001	73	25	32.5	1.7290	.2599	.0099
BURLINGTON	001	74	56	27.1	1.8000	.1899	.0099
DANBURY	001	73	38	58.1	1.7820	5.4799	.4699
DANBURY	001	74	51	51.5	1.5880	1.0699	.0199
EAST HARTFORD	001	74	42	42.8	1.6050	.3499	.0099
EAST HARTFORD	002	74	37	41.2	1.5600	.1899	.0000
ENFIELD	001	73	50	55.6	1.6270	2.2699	.0699
ENFIELD	001	74	59	50.5	1.6540	1.3899	.0499
FAIRFIELD	002	73	45	43.4	1.3110	.0000	.0000
FAIRFIELD	002	74	39	43.8	1.3670	.0000	.0000

TABLE II

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLLUTANT-- PARTICULATES DISTRIBUTION-- LOGNORMAL

TOWN	SITE	YEAR	NUM. OF SAMPLES	GEOM MEAN	STD GEOM DEV	PERCENT OVER 150 UG/M3	PERCENT OVER 260 UG/M3
GREENWICH	001	73	56	46.5	1.4910	.1899	.0000
GREENWICH	001	74	53	52.3	1.6240	1.3899	.0499
GREENWICH	002	73	57	58.6	1.5700	1.7899	.0499
GREENWICH	002	74	59	51.3	1.6750	1.7899	.0999
GREENWICH	003	73	58	51.3	1.5750	.8199	.0199
GREENWICH	003	74	59	52.6	1.5550	.8199	.0199
GREENWICH	004	73	47	42.3	1.7490	1.0699	.0699
GREENWICH	004	74	48	40.1	1.7330	.8199	.0299
GREENWICH	007	73	56	36.1	1.6070	.1299	.0000
GREENWICH	007	74	60	43.8	1.6620	.8199	.0199
GREENWICH	008	73	59	62.7	1.6200	3.5899	.1899
GREENWICH	008	74	61	64.5	1.6080	3.5899	.1899
GREENWICH	014	74	60	63.0	1.5010	1.7899	.0199
GROTON	001	73	79	33.2	1.7310	.2599	.0099
GROTON	001	74	61	34.5	1.6740	.1899	.0000
HADDAM	002	74	44	32.9	1.6490	.1299	.0000
HARTFORD	002	73	11	54.2	1.3290	.0199	.0000
HARTFORD	002	74	51	50.7	1.5120	.4699	.0000
HARTFORD	003	73	33	80.7	1.4740	5.4799	.1299
HARTFORD	003	74	55	62.4	1.5990	2.8699	.1299
HARTFORD	004	73	49	49.6	1.6350	1.0699	.0299
HARTFORD	004	74	46	46.1	1.6890	1.0699	.0499
HARTFORD	005	74	45	44.2	1.6150	.6199	.0099
KENT	001	73	27	38.6	1.9230	1.,899	.1899
KENT	001	74	56	31.4	1.8590	.6199	.0299
MANCHESTER	001	73	25	44.5	1.6830	1.0699	.0299

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CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLLUTANT-- PARTICULATES DISTRIBUTION-- LOGNORMAL

TOWN	SITE	YEAR	NUM. OF SAMPLES	GEOM MEAN	STD GEOM DEV	PERCENT OVER 150 UG/M3	PERCENT OVER 260 UG/M3
MANCHESTER	001	74	37	44.7	1.5920	.4699	.0099
MANSFIELD	001	73	18	23.2	1.4970	.0000	.0000
MANSFIELD	001	74	47	34.3	1.6090	.0999	.0000
MERIDEN	001	73	36	58.2	1.8390	5.4799	.6199
MERIDEN	001	74	55	50.3	1.6070	1.0699	.0199
MERIDEN	002	73	56	67.1	1.7390	6.6799	.8199
MERIDEN	002	74	59	50.4	1.6550	1.3899	.0499
MERIDEN	003	73	57	54.4	1.8900	5.479[illegible]	.6199
MERIDEN	003	74	53	50.9	1.7980	3.589[illegible]	.2599
MERIDEN	005	73	52	59.7	1.7660	5.479[illegible]	.4699
MERIDEN	005	74	57	63.4	1.8710	8.07[illegible]	1.0699
MERIDEN	006	73	51	49.7	1.8940	4.45[illegible]	.4699
MERIDEN	006	74	54	56.1	1.7550	4.45[illegible]	.3499
MIDDLETOWN	001	73	60	51.4	1.8870	4.45[illegible]	.4699
MIDDLETOWN	001	74	59	34.6	1.6790	.2599	.0000
MIDDLETOWN	003	73	59	55.7	1.5290	1.0699	.0199
MIDDLETOWN	003	74	61	51.3	1.6130	1.3899	.0299
MIDDLETOWN	004	73	49	51.7	2.2550	9.6799	2.2699
MILFORD	001	73	49	43.8	1.4760	.0699	.0000
MILFORD	001	74	60	46.7	1.5520	.3499	.0000
MILFORD	002	73	54	49.9	1.4400	.1299	.0000
MILFORD	002	74	54	51.2	1.5250	.6199	.0000
MILFORD	006	73	59	41.4	1.6120	.3499	.0099
MILFORD	006	74	60	40.9	1.5480	.1299	.0000
MORRIS	001	73	57	31.4	1.8120	.4699	.0199
MORRIS	001	74	60	27.7	1.7460	.1299	.0000

TABLE II

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLLUTANT-- PARTICULATES DISTRIBUTION-- LOGNORMAL

TOWN	SITE	YEAR	NUM. OF SAMPLES	GEOM MEAN	STD GEOM DEV	PERCENT OVER 150 UG/M3	PERCENT OVER 260 UG/M3
NAUGATUCK	001	73	57	69.4	1.6530	6.6799	.4699
NAUGATUCK	001	74	61	61.1	1.6460	3.5899	.1899
NEW BRITAIN	001	73	23	59.4	1.7790	5.4799	.4699
NEW BRITAIN	001	74	61	52.4	1.6170	1.3899	.0499
NEW BRITAIN	002	73	56	77.7	1.6600	9.6799	.8199
NEW BRITAIN	002	74	58	70.1	1.6000	5.4799	.2599
NEW BRITAIN	003	73	57	73.9	1.7510	9.6799	1.3899
NEW BRITAIN	003	74	60	62.9	1.6760	4.4599	.3499
NEW BRITAIN	004	73	59	51.1	1.7260	2.2699	.1299
NEW BRITAIN	004	74	60	37.0	1.7440	.6199	.0199
NEW BRITAIN	005	73	58	45.5	1.6380	.8199	.0199
NEW BRITAIN	005	74	58	38.8	1.8630	1.3899	.0999
NEW HAVEN	001	73	48	56.2	1.4040	.1899	.0000
NEW HAVEN	001	74	61	57.4	1.5650	1.7899	.0299
NEW HAVEN	002	73	51	62.9	1.7200	5.4799	.4699
NEW HAVEN	002	74	56	42.3	2.1500	4.4599	.8199
NEW HAVEN	003	73	61	43.4	1.4890	.0999	.0000
NEW HAVEN	003	74	61	46.4	1.6500	1.0699	.0299
NEW HAVEN	005	73	58	57.6	1.7040	3.5899	.2599
NEW HAVEN	005	74	58	47.2	1.6870	1.3899	.0499
NEW HAVEN	009	73	61	48.8	1.4610	.1299	.0000
NEW HAVEN	009	74	60	50.7	1.5440	.6199	.0099
NORTH CANAAN	001	74	58	38.0	1.6870	.4699	.0099
NORWALK	001	73	53	52.4	1.5530	.8199	.0199
NORWALK	001	74	56	53.4	1.6090	1.3899	.0499
NORWALK	005	73	63	61.9	1.5940	2.8699	.0999
NORWALK	005	74	57	66.5	1.6370	4.4599	.2599

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CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLLUTANT-- PARTICULATES DISTRIBUTION-- LOGNORMAL

TOWN	SITE	YEAR	NUM. OF SAMPLES	GEOM MEAN	STD GEOM DEV	PERCENT OVER 150 UG/M3	PERCENT OVER 260 UG/M3
NORWICH	001	73	48	58.9	1.5510	1.7899	.0299
NORWICH	001	74	58	47.7	1.6750	1.3899	.0499
OLD SAYBROOK	001	73	15	56.7	1.4140	.2599	.0000
OLD SAYBROOK	001	74	60	66.1	1.6410	4.4599	.2599
ORANGE	003	73	56	46.6	1.6190	.8199	.0199
ORANGE	003	74	36	48.4	1.7310	1.7899	.0999
PUTNAM	002	73	50	43.3	1.7970	1.7899	.0999
PUTNAM	002	74	59	34.9	1.8350	.8199	.0499
STAMFORD	001	73	17	99.3	1.4870	15.8699	.8199
STAMFORD	001	74	54	67.1	1.7210	6.6799	.6199
STAMFORD	003	74	46	47.9	1.7650	2.2699	.1299
STAMFORD	004	73	31	83.1	1.8640	18.4099	3.5899
STAMFORD	004	74	57	45.8	1.9920	4.4599	.6199
STAMFORD	007	74	46	74.2	1.8200	11.5099	1.7899
STAMFORD	010	73	35	62.1	1.6960	4.4599	.3499
STRATFORD	001	73	14	51.0	1.6700	1.7899	.0699
STRATFORD	001	74	51	38.8	1.7350	.6199	.0199
STRATFORD	005	73	15	57.8	1.4720	.6199	.0000
STRATFORD	005	74	44	58.0	1.6300	2.8699	.0999
THOMASTON	003	73	57	39.7	1.6250	.3499	.0000
THOMASTON	003	74	59	41.7	1.7670	1.3899	.0699
TORRINGTON	001	73	59	47.3	1.6510	1.0699	.0299
TORRINGTON	001	74	60	53.4	1.6810	2.2699	.1299
VOLUNTOWN	001	73	47	29.3	1.8340	.3499	.0199
VOLUNTOWN	001	74	56	25.7	1.8420	.1899	.0099
WATERBURY	001	73	26	76.9	1.5560	6.6799	.2599

TABLE II

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLLUTANT-- PARTICULATES DISTRIBUTION-- LOGNORMAL

TOWN	SITE	YEAR	NUM. OF SAMPLES	GEOM MEAN	STD GEOM DEV	PERCENT OVER 150 UG/M3	PERCENT OVER 260 UG/M3
WATERBURY	001	74	51	72.3	1.7250	9.6799	1.0699
WATERBURY	002	74	20	53.2	1.7150	2.8699	.1899
WATERFORD	001	74	48	31.1	1.7450	.2599	.0099
WILLIMANTIC	001	73	28	45.7	1.4760	.0999	.0000
WILLIMANTIC	001	74	61	39.6	1.5970	.2599	.0000
WINCHESTER	001	73	58	40.6	1.7310	.8199	.0299
WINCHESTER	001	74	60	44.7	1.7220	1.3899	.0699

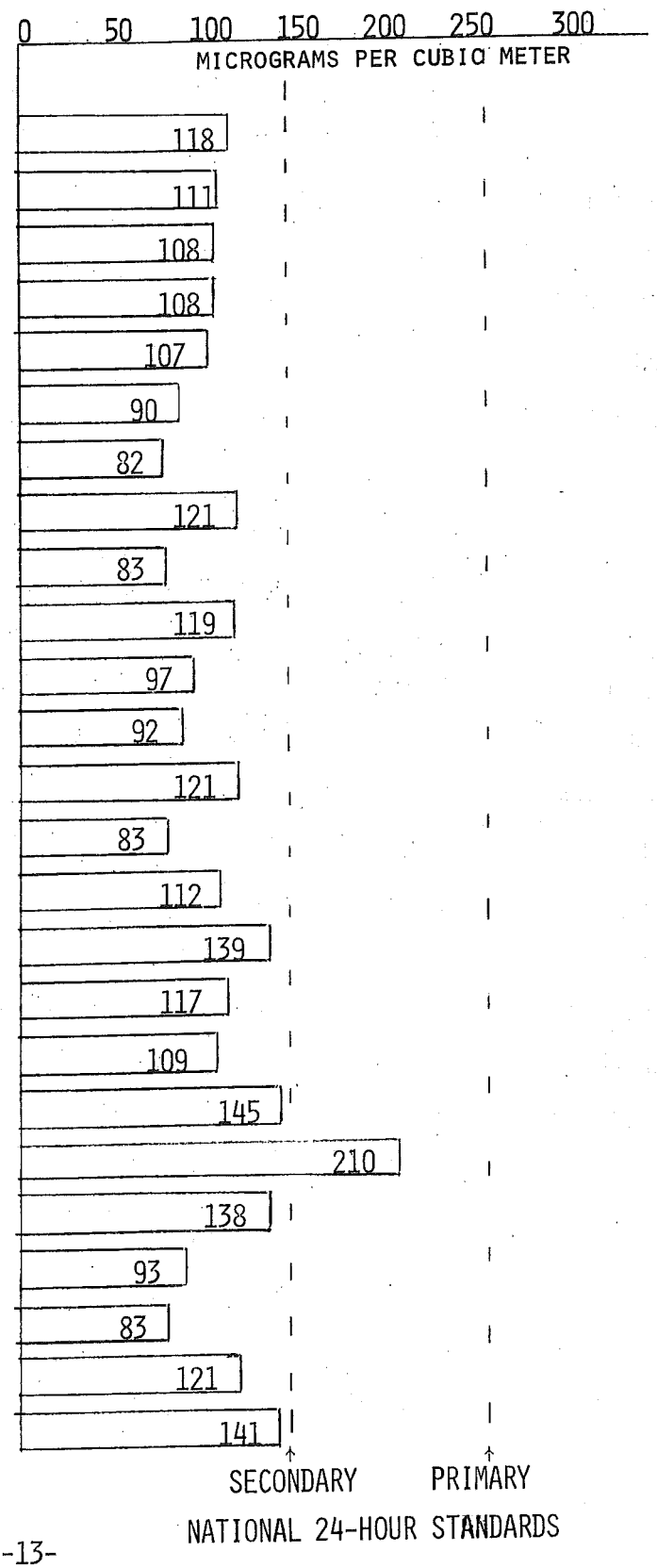
TOTAL SUSPENDED PARTICULATES

1974 - CONNECTICUT

TABLE III

SECOND HIGHEST 24-HOUR CONCENTRATION

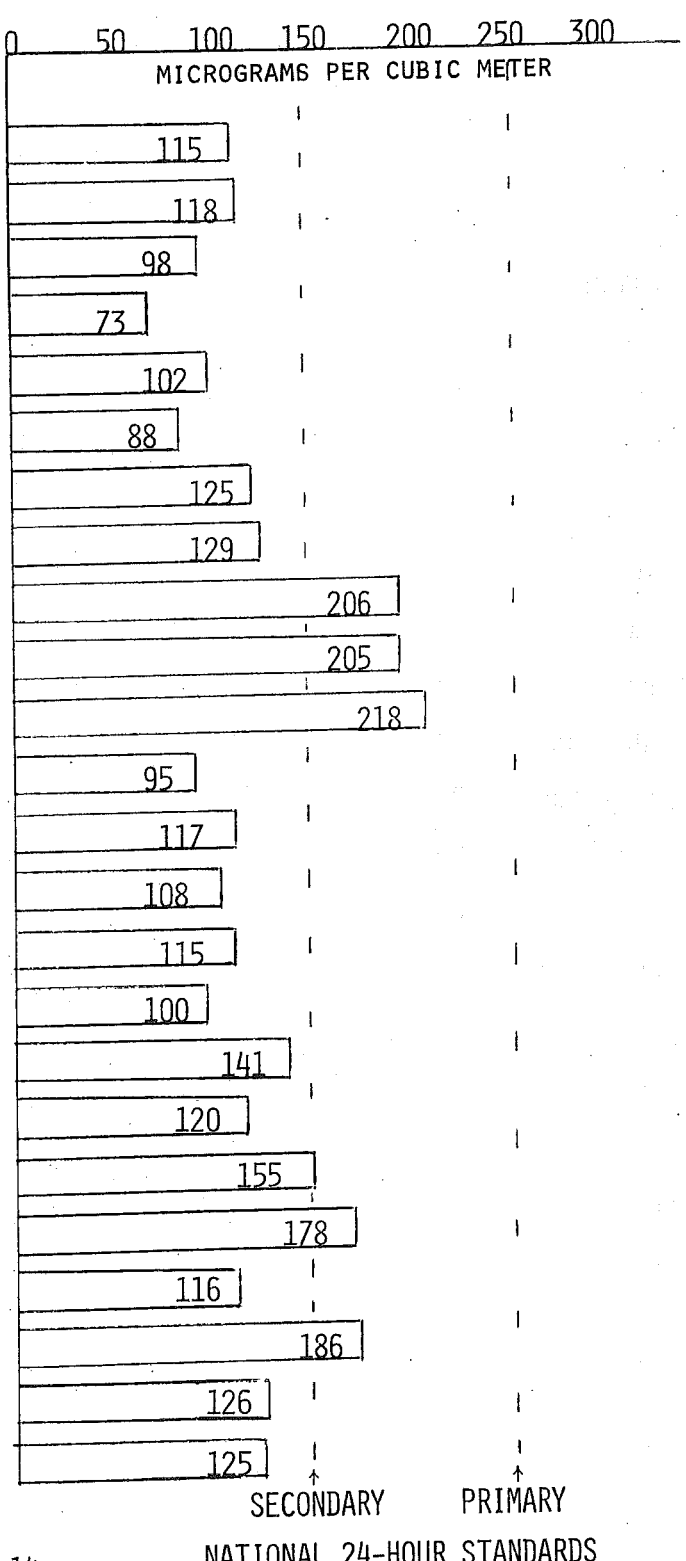
TOWN	SITE	DATE OF SECOND HIGH	SECOND HIGHEST 24-HOUR CONCENTRATION
ANSONIA	003	4/29	118
BERLIN	001	4/29	111
BRIDGEPORT	001	1/24	108
BRIDGEPORT	002	5/17	108
BRISTOL	001	4/29	107
BRISTOL	002	4/29	90
BRISTOL	003	5/17	82
BRISTOL	004	12/13	121
BURLINGTON	001	5/17	83
DANBURY	001	4/29	119
EAST HARTFORD	001	5/17	97
EAST HARTFORD	002	12/7	92
ENFIELD	001	4/29	121
FAIRFIELD	002	5/17	83
GREENWICH	001	10/20	112
GREENWICH	002	2/28	139
GREENWICH	003	2/28	117
GREENWICH	004	5/17	109
GREENWICH	007	7/10	145
GREENWICH	008	4/29	210
GREENWICH	014	5/17	138
GROTON	001	11/1	93
HADDAM	002	4/29	83
HARTFORD	002	4/29	121
HARTFORD	003	1/6	141



TOTAL SUSPENDED PARTICULATES
1974 - CONNECTICUT
SECOND HIGHEST 24-HOUR CONCENTRATION

TABLE III

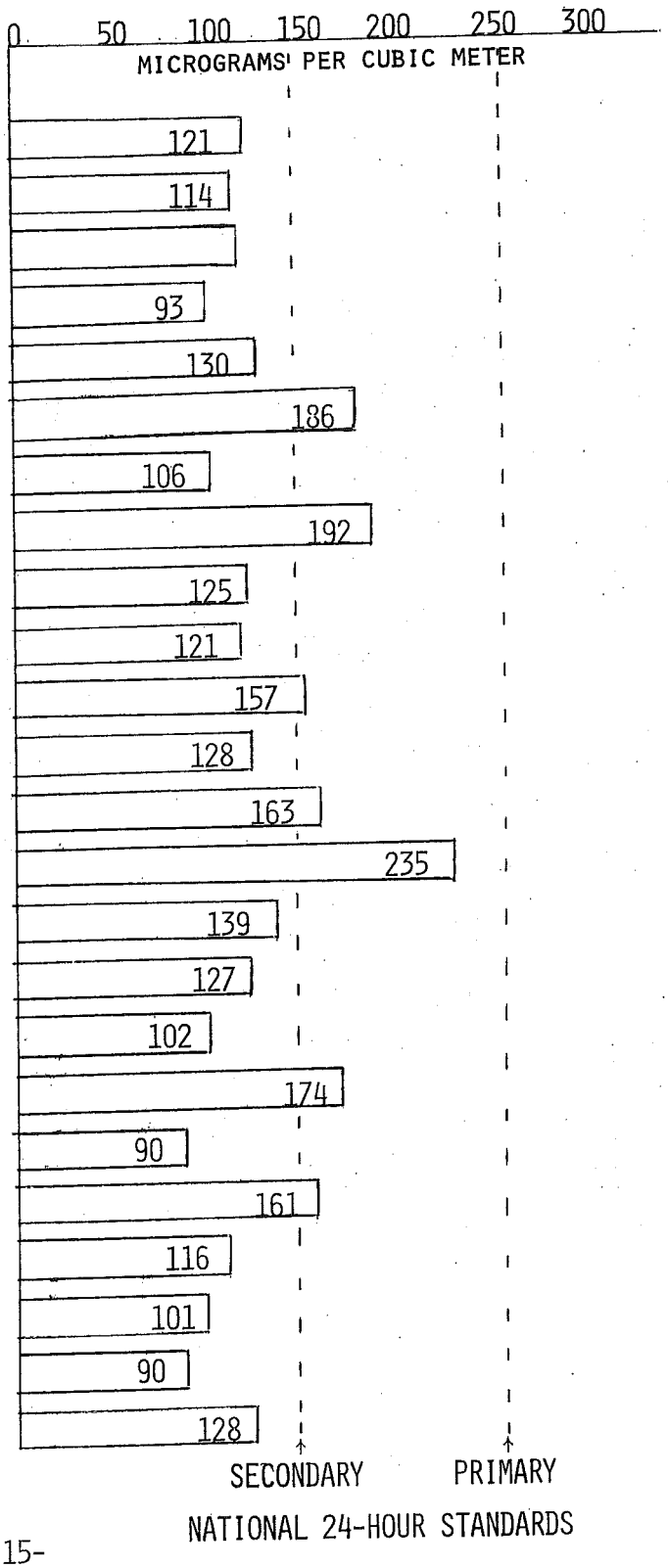
TOWN	SITE	DATE OF SECOND HIGH	SECOND HIGHEST 24-HOUR CONCENTRATION
HARTFORD	004	4/29	115
HARTFORD	005	4/29	118
KENT	001	7/10	98
MORRIS DAM	001	2/28	73
MANCHESTER	001	4/29	102
MANSFIELD	001	6/10	88
MERIDEN	001	3/18	125
MERIDEN	002	1/29	129
MERIDEN	003	7/16	206
MERIDEN	005	5/17	205
MERIDEN	006	5/17	218
MIDDLETOWN	001	11/1	95
MIDDLETOWN	003	12/7	117
MILFORD	001	5/17	108
MILFORD	002	5/17	115
MILFORD	006	5/17	100
NAUGATUCK	001	4/29	141
NEW BRITAIN	001	12/7	120
NEW BRITAIN	002	10/8	155
NEW BRITAIN	003	11/19	178
NEW BRITAIN	004	12/13	116
NEW BRITAIN	005	10/8	186
NEW HAVEN	001	11/1	126
NEW HAVEN	002	12/13	125



TOTAL SUSPENDED PARTICULATES
1974 - CONNECTICUT
SECOND HIGHEST 24-HOUR CONCENTRATION

TABLE III

TOWN	SITE	DATE OF SECOND HIGH	MICROGRAMS PER CUBIC METER
NEW HAVEN	003	4/29	121
NEW HAVEN	005	5/17	114
NEW HAVEN	009	5/17	
NORTH CANAAN	001	2/16	93
NORWALK	001	5/17	130
NORWALK	005	1/23	186
NORWICH	001	5/17	106
OLD SAYBROOK	001	2/28	192
ORANGE	003	7/10	125
PUTNAM	002	6/28	121
STAMFORD	001	1/29	157
STAMFORD	003	11/1	128
STAMFORD	004	2/28	163
STAMFORD	007	3/6	235
STRATFORD	001	5/23	139
STRATFORD	005	2/28	127
THOMASTON	003	4/29	102
TORRINGTON	001	2/16	174
VOLUNTOWN	001	4/29	90
WATERBURY	001	3/6	161
WATERBURY	002	12/7	116
WATERFORD	001	6/10	101
WILLIMANTIC	001	12/13	90
WINCHESTER	001	4/11	128



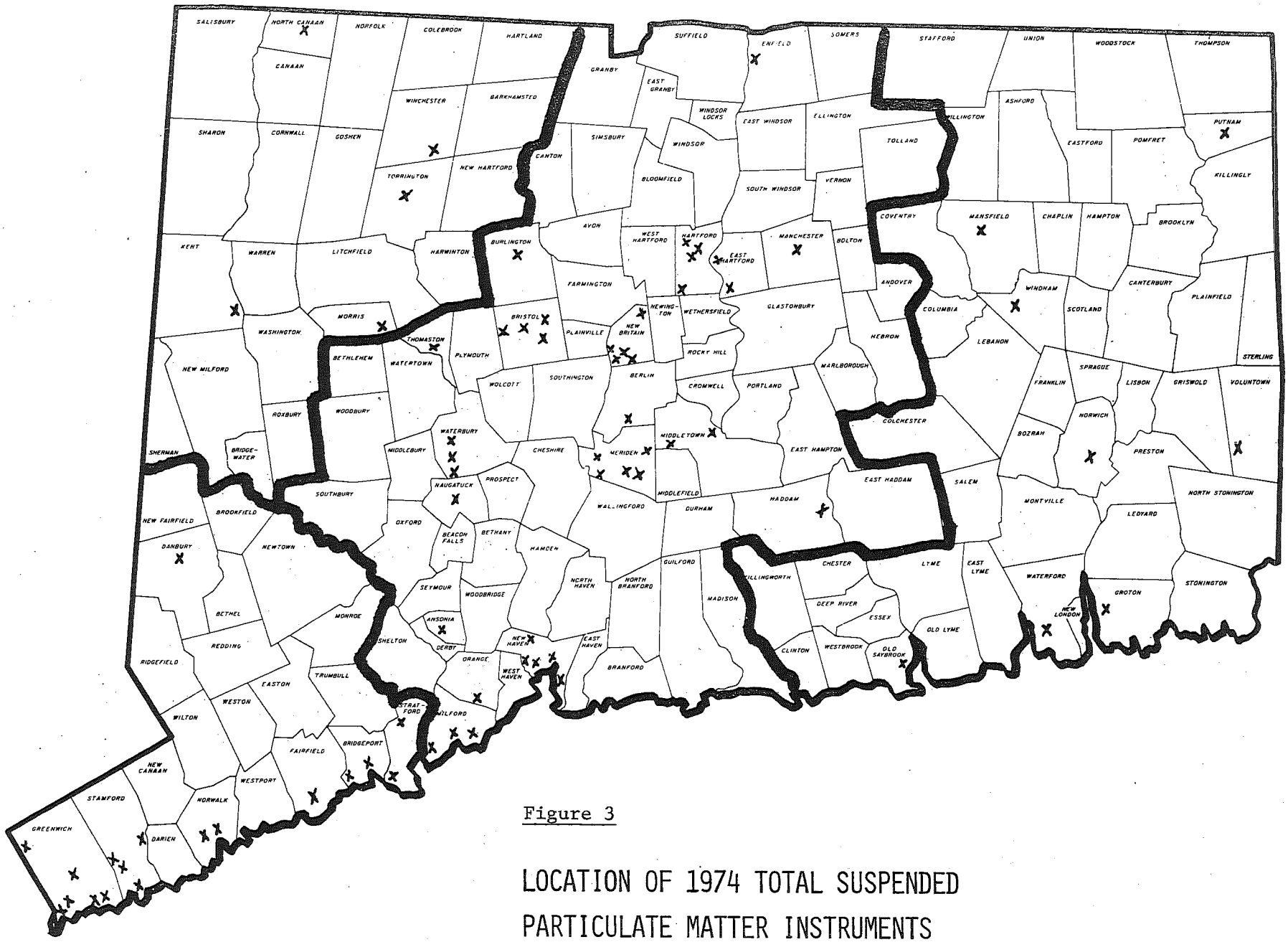


Figure 3

LOCATION OF 1974 TOTAL SUSPENDED PARTICULATE MATTER INSTRUMENTS

II. AEROMETRIC DATA

B. Sulfur Oxides

I. Conclusions:

At no monitoring site in Connecticut in 1974 was the annual sulfur dioxide (SO_2) standard exceeded. However, 2 of the 3 sites that did exceed the standard in 1973 (Waterbury and New Britain) had only partial data in 1974. A few sites (notably in Hartford and New Haven) had lower levels in 1974 than in 1973, in spite of the fact that no new restrictions on the sulfur content of fuel came into effect in 1974. Warm weather and high fuel prices, both resulting in lower fuel use, may explain these decreases since 1973.

No monitoring site in Connecticut recorded a violation of the 24-hour or 3-hour ambient standards for SO_2 in 1974.

II. Discussion of data:

Data were received from twenty-three continuous SO_2 monitors for all or parts of 1974. Of these, eight were operated by Northeast Utilities. Because some sites were established late in the year and others had instrument problems, valid annual averages could be compiled at only sixteen sites and estimated at three others.

Some changes in the SO_2 sampling network were made in late 1974, resulting in new sites placed more closely to some of the higher SO_2 concentration locations in the state. Completion of the twelve-unit telemetry system in 1975 will result in further refinement and expansion of the SO_2 network.

III. Facts about Sulfur Dioxide:

Sulfur dioxide is a colorless, odiferous gas with very corrosive qualities. In high concentrations it irritates human mucous membranes, damages vegetation and attacks many materials. The major source of SO_2 in Connecticut is the combustion of sulfur-containing fuel. The areas of highest ambient concentration in Connecticut are usually those areas of highest density of large users of fuel and oil. Short term high levels occur when dispersing conditions are poor. Thus the large coastal cities appear to have less problem than those inland, probably due to the cleansing effect of land-sea breezes.

Highest concentrations are generally found in the colder months when sulfur-containing fuel for heating is used in large quantities. Sulfur dioxide is removed from the atmosphere by a number of natural mechanisms, so no long-term build-up occurs. However, the removal rate is often slow enough that there is some evidence that SO_2 from out of state sources is transported to Connecticut.

IV. Method of collection:

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 and by Meloy instruments operated by Northeast Utilities. The conductometric method is employed by Davis and Scientific Industries instruments, and is believed to be the least accurate of the three types of continuous SO_2 monitors.

TABLE IV
ANNUAL ARITHMETIC AVERAGES OF SULFUR OXIDES
AT SITES WITH CONTINUOUS MONITORS

Primary NAAQS 80 $\mu g/m^3$

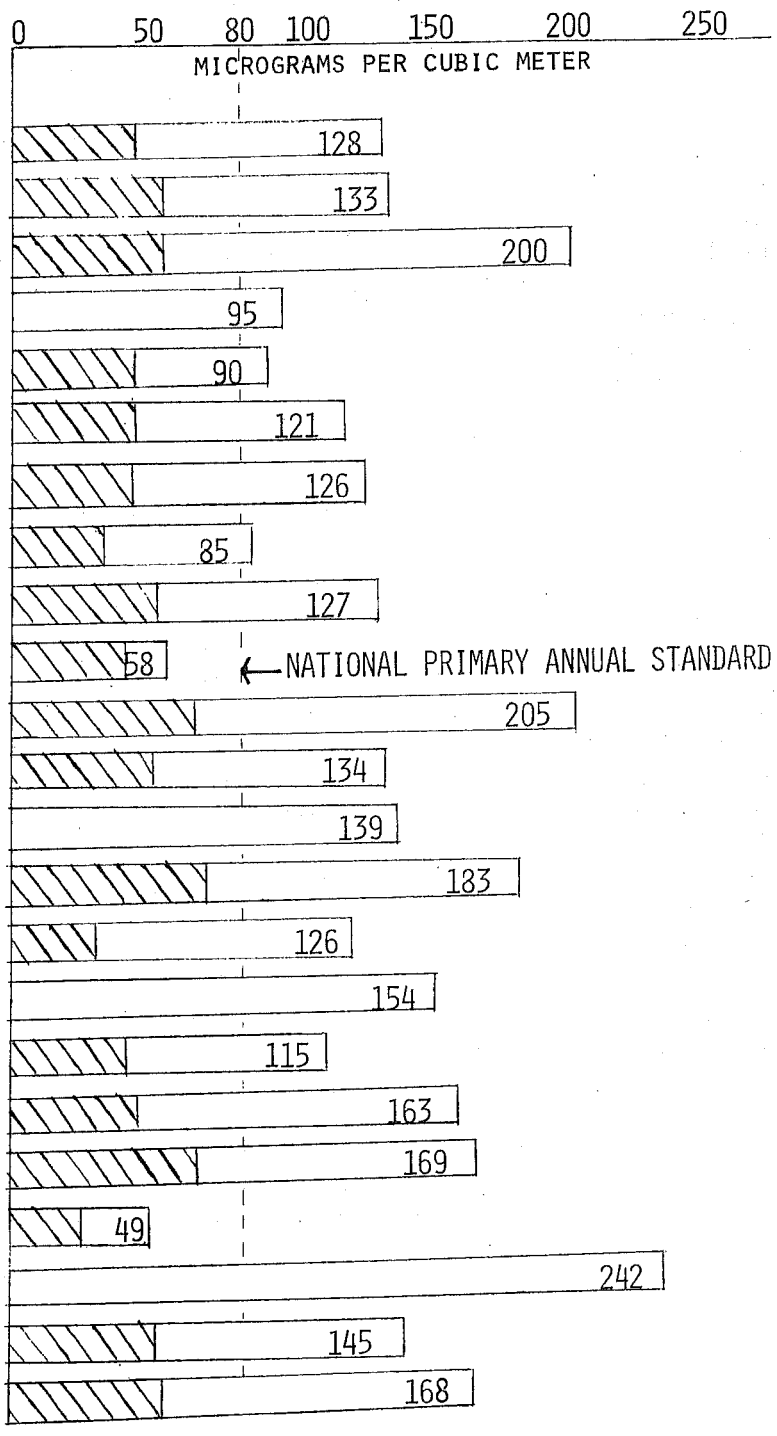
Town	Site #	Site Name	1974	1973	1972	1971
Bridgeport	001	City Hall	42	44	62	76
Bridgeport	002	Fairfield Ave. Fire House	51	31	54	--
Bridgeport	003	McKinley School	49	50	50	--
Danbury	123	Automated Station	--[a]	--	--	--
East Hampton	001	NU[e] - Midwood Farm Road	42	47	49	43
East Hampton	003	NU[e] - School House Lane	39	--	--	--
Greenwich	001	Town Hall Annex	37	53	45	62
Greenwich	004	Bruce Golf Course	(29)[b]	29	33	43
Greenwich	008	Cos Cob Fire House	48	55	43	71
Groton	003	NU[e] - Buddington Road	39	--	--	--
Haddam	001	NU[e] - Connecticut Yankee	63	--	--	--
Hartford	003	Public Library	48	69	61	91
Hartford	007	Trailer at S.O.B.	--[a]	--	--	--
Hartford	008	NU[e] - Maple Ave.	71	82	108	--
Middletown		NU[e] - Sumner Street	--	52	79	97
Milford	002	Devon Community Center	31	(25)[b]	--	--
Montville		NU[e] - Depot Road	--	44	53	--
New Britain	002	City Hall	--[a]	(80)[c]	120	96
New Haven	004	Community Service Bldg.	40	54	79	84
New Haven	008	Agricultural Station	--	38	41	51
Norwalk	005	Health Department	44	50	62	65
Norwalk	009	NU[e] - Harbor Ave.	64	59	79	--
Preston	001	NU[e] - Eccleston Road	(24)[b]	--	--	--
Stamford	003/123	Health Department	-- [a]	(78)[b]	90	119
Stratford		NU[e] - Reeds Lane	51	50	60	--
Waterbury	001	City Hall	(56)[d]	84	93	103

a - Insufficient data for valid annual average or estimate
b - Estimate based on partial data
c - Based upon questionable data
d - September - December data missing
e - Owned and operated by Northeast Utilities

TABLE V

CONNECTICUT 1974 SULFUR DIOXIDE 24-HOUR AVERAGE

TOWN	SITE		DATE OF SECOND HIGH
BRIDGEPORT	001		1/6
BRIDGEPORT	002		7/31
BRIDGEPORT	003		1/7
DANBURY	123	*	11/18
EAST HAMPTON	001		2/13
EAST HAMPTON	003		2/23
GREENWICH	001		1/16
GREENWICH	004	*	3/7
GREENWICH	008		7/4
GROTON	003		11/18
HADDAM	001		2/20
HARTFORD	003		12/27
HARTFORD	007	*	11/23
HARTFORD	008		4/17
MILFORD	002		5/15
NEW BRITAIN	002	*	10/29
NEW HAVEN	004		12/6
NORWALK	005		1/16
NORWALK	009		2/13
PRESTON	001	*	12/27
STAMFORD	003	*	12/29
STRATFORD	005		3/28
WATERBURY	001	*	6/30



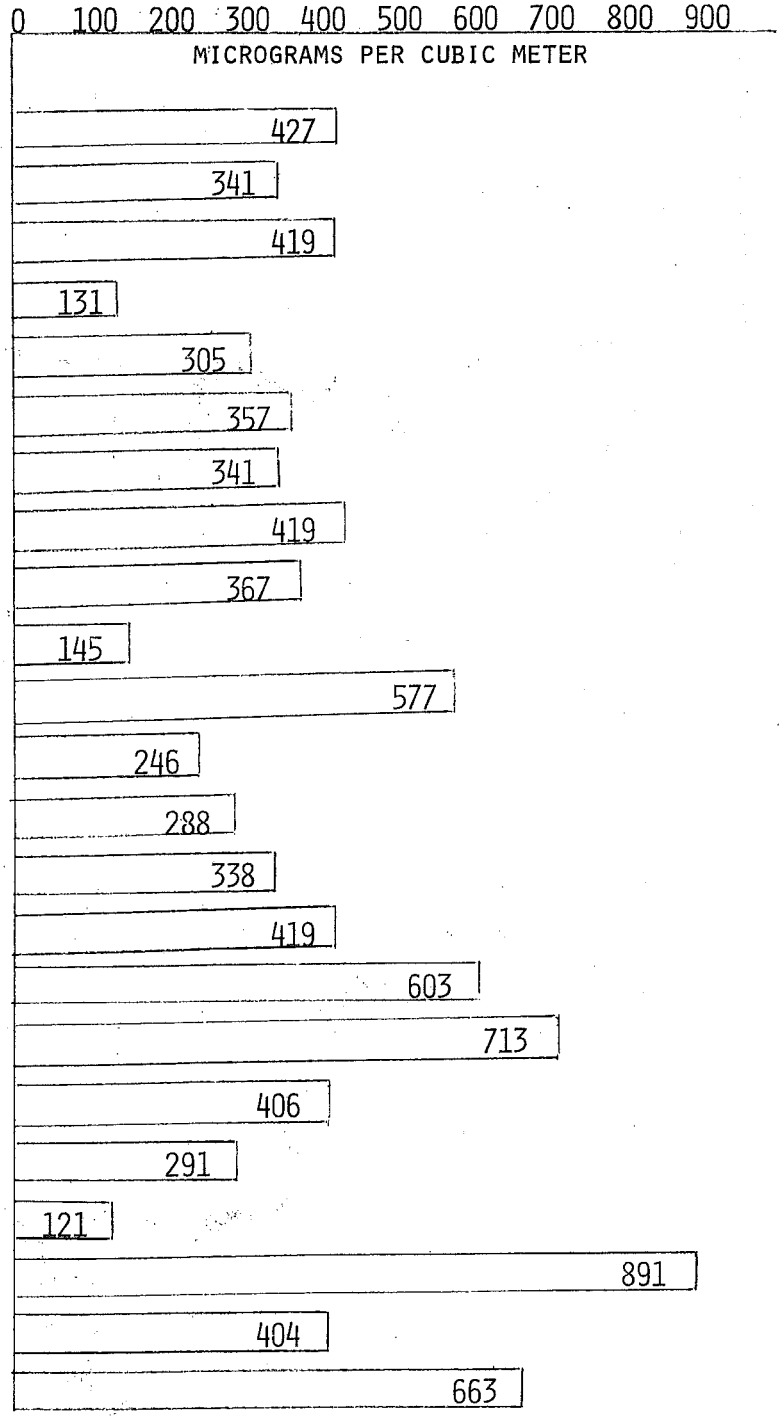
ANNUAL ARITHMETIC MEAN

SECOND HIGHEST 24-HOUR AVERAGE

* DENOTES PARTIAL DATA

TABLE VI

CONNECTICUT 1974 SULFUR DIOXIDE ONE HOUR AVERAGE



NOTE: THE 1300 UG/M^3 STANDARD WAS NOT EXCEEDED AT ANY SITE.

[ ] MAXIMUM HOURLY READING IN 1974

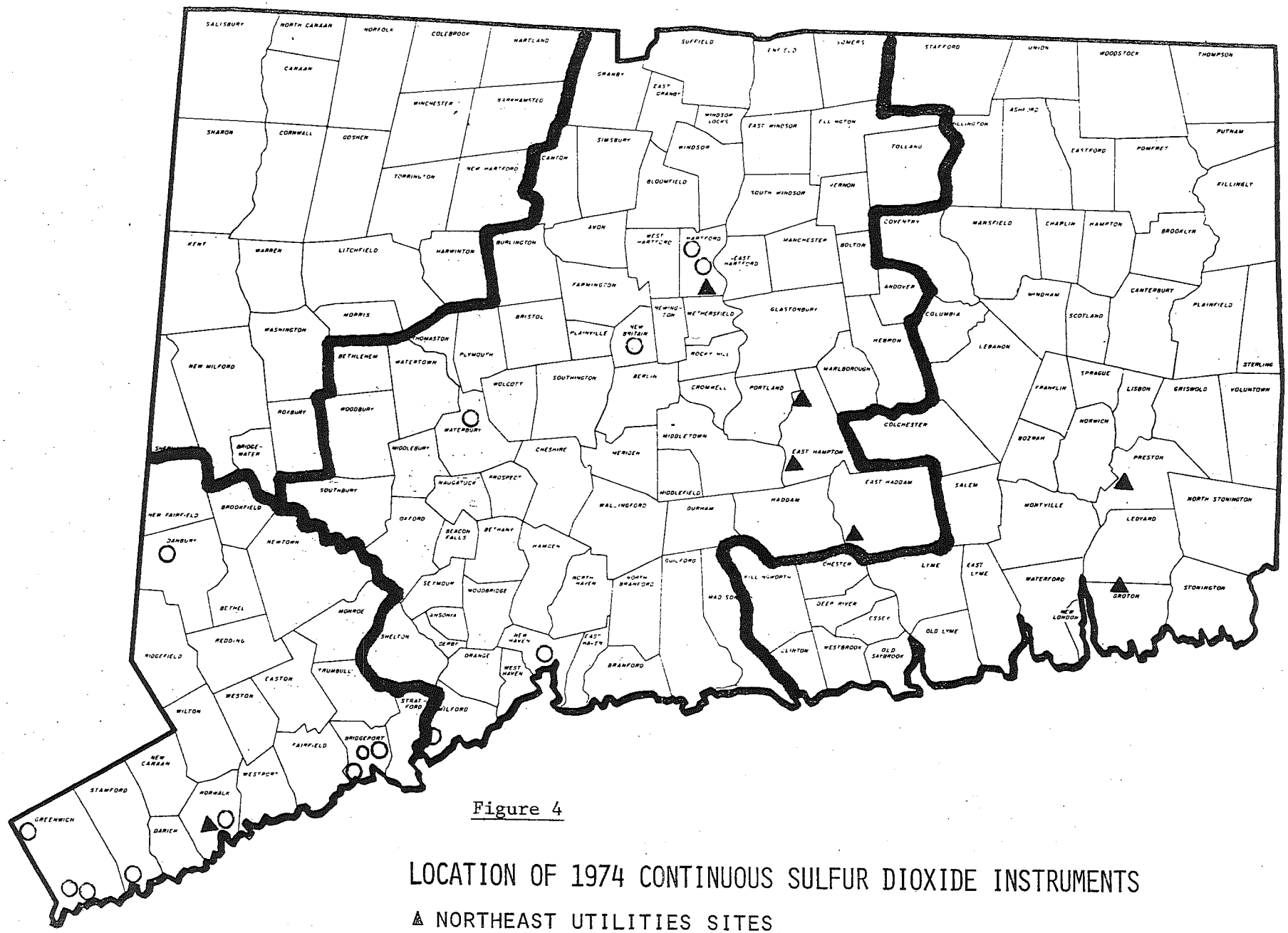


Figure 4

LOCATION OF 1974 CONTINUOUS SULFUR DIOXIDE INSTRUMENTS

▲ NORTHEAST UTILITIES SITES

o D.E.P. SITES

II. AEROMETRIC DATA

C. Ozone

I. Conclusions:

Connecticut experienced high levels of photochemical oxidants (measured as ozone) during the summer of 1974. At each of the 14 monitoring sites, levels in excess of the National Ambient Air Quality Standard were recorded frequently throughout the summer months. Apparently because of Connecticut's position relative to the New York-New Jersey-Connecticut metropolitan region (predominantly downwind in the summer) higher levels of ozone are measured in Connecticut than elsewhere in the region.

No measureable decrease in levels can be detected since last year. However, the new automobile emission control devices should begin to show some effect and, together with the transportation control program now being developed, should cause the long-term trend of ozone levels to be downward over the next five to ten years.

II. Discussion of data:

A. DEP began using chemiluminescent ozone instruments in 1972. In 1973, seven such instruments were employed and in 1974, fourteen.

B. Because of atmospheric reactions, concentrations of ozone are generally highest in the afternoons of sunny, hot days. Chemical reaction with other substances in the air (notably nitrogen oxides and hydrocarbons) can cause different levels of ozone to be measured at different sites. In order to gather information which will further the understanding of transport, production, destruction and other characteristics of ozone or photochemical oxidants, DEP operated a variety of types of sites in 1974:

1. Urban - Bridgeport, Stamford, Hartford, Waterbury, New Britain, Middletown
2. New York Flux - Greenwich, Danbury
3. Suburban - New Haven, Windsor, Groton
4. Rural - Morris, Deep River, Eastford

III. Facts about ozone:

A. General:

Ozone or photochemical oxidants are emitted directly only in insignificant amounts. However, various hydrocarbons and oxides of nitrogen react in a complex fashion in the atmosphere to produce and destroy oxidants. In the presence of sunlight, the production dominates (hence, photochemical oxidants),and levels build up during the day and drop at night. Hydrocarbons and oxides of nitrogen are both emitted during combustion of petroleum products, especially automobile fuel.

B. Chemistry:

1. The term ozone is often used interchangeably with the term "smog", though Los Angeles-type smog is chemically somewhat different than Connecticut's.

2. There is an intimate relationship between ozone and oxides of nitrogen, which participate together with hydrocarbons in various forms in both the production and the destruction of ozone. While many factors determine the concentrations of ozone, it is oxides of nitrogen that are primarily responsible for the diurnal (daily) cycle of levels, rising to a peak in the afternoon and falling at night.

3. Other factors that play a part in determining ozone concentrations are: intensity of solar radiation, temperature, mixing volume of the lower atmosphere, and relationship among wind direction, speed and distance and direction to major sources (urban areas).

IV. 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 flourescent technique. Kept properly calibrated, these instruments have been shown to be remarkably reliable and dependable.

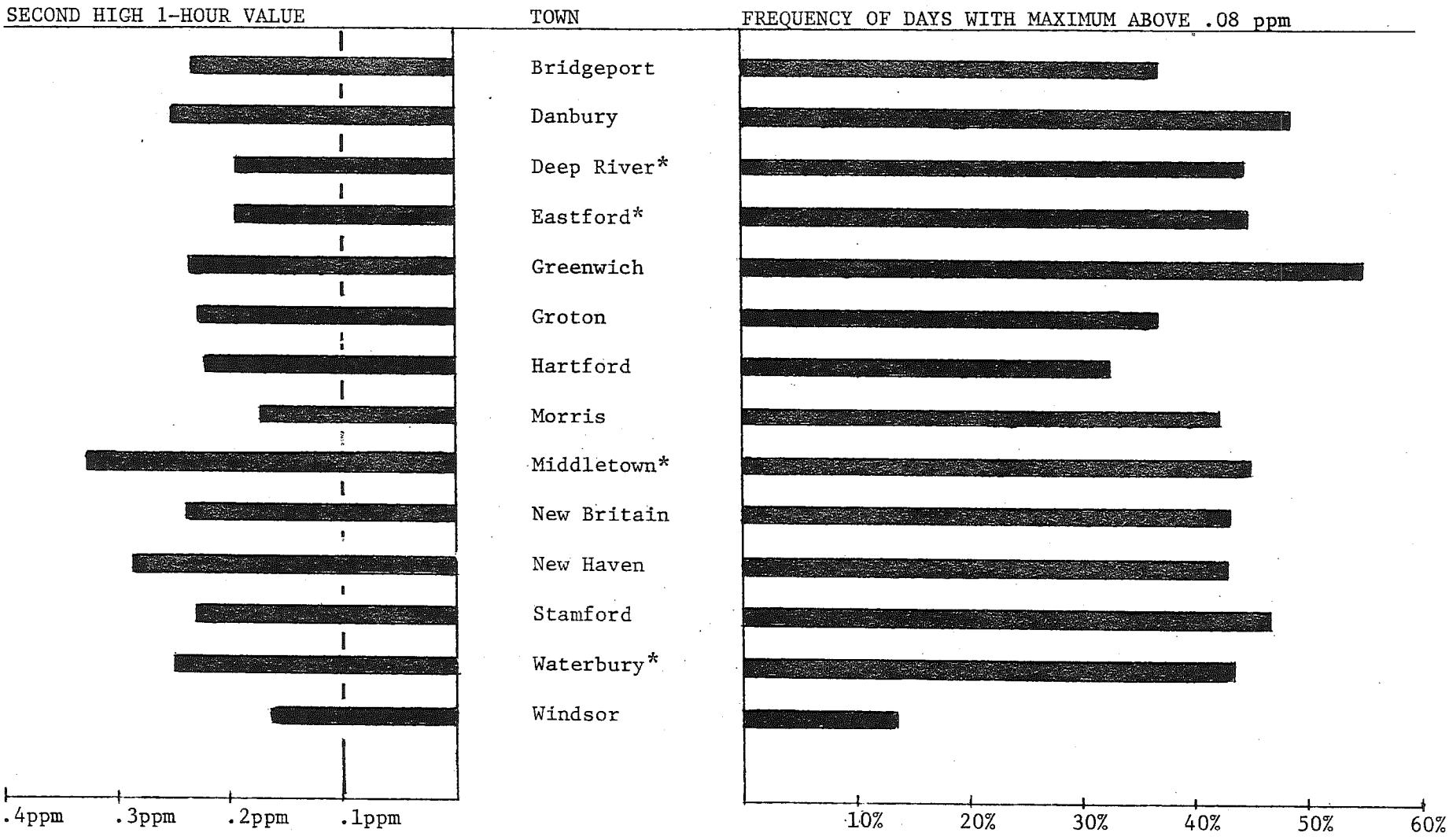
V. Data:

Most of the ozone instruments are operated only in the spring and summer months in Connecticut. The following tables are summaries of all Connecticut 1974 ozone data. Table VII - second high hourly average and frequency at all sites; Table VIII - May to September data from all sites; Table IX - Histogram from selected sites.

CONNECTICUT OZONE - 1974 SUMMARY

(MAY - SEPTEMBER)

TABLE VII



*Indicates less than five months of data.

TABLE VIII

CONNECTICUT OZONE - MAY - 1974

Towns	Max. 1-hr. value (ppm)	Time[1] of Max.	2nd High 1-hr. value (ppm)	Time[1] of 2nd High	Total# hourly values	Total Days[2]	# of days with max. 1-hr. reading in each range: .00 to .08	.081 to .099	.1 to .199	.2 to .299	.3 or Above	# Days with Maximum Above .08 ppm
Bridgeport	.250	22/15	.200	22/16	716	30	24	1	2	1		4
Danbury	.255	16/17	.238	16/18	410	20	11	1	7	1		9
Deep River												
Eastford												
Greenwich	.210	16/16	.180	16/15	475	21	12	2	6	1		9
Groton	.228	17/15	.223	17/14	509	22	17	2	1	2		5
Hartford	.202	22/15	.179	22/15	714	31	25	4	1	1		6
Morris	.090	30/16	.090	30/17	178	8	7	1				1
Middletown	.365	22/17	.324	22/16	558	24	15	3	5		1	9
New Britain	.240	22/15	.190	22/14	555	24	17	2	4	1		7
New Haven	.273	22/16	.257	22/15	417	19	14	1	3	1		5
Stamford	.240	22/15	.219	22/16	708	30	21	3	5	1		9
Waterbury	.175	22/19	.161	22/18	249	12	9	1	2			3
Windsor	.113	22/19	.113	22/20	415	18	16	1	1			2

[1]Time is given in the following format. The date of occurrence appears on the left side of the slash. The hour (EST) specifying the end of the averaging hour appears on the right side of the slash.

[2]Total days is the number of days with at least one valid reading.

TABLE VIII

CONNECTICUT OZONE - JUNE - 1974

Towns	Max. 1-hr. value (ppm)	Time[1] of Max.	2nd High 1-hr. value (ppm)	Time[1] of 2nd High	Total# hourly values	Total Days[2]	# of days with max. 1-hr. reading in each range: .00 to .08	.081 to .099	.1 to .199	.2 to .299	.3 or Above	# Days with Maximum Above .08 ppm
Bridgeport	.230	10/16	.190	20/15	717	30	19	3	7	1		11
Danbury	.270	10/17	.185	5/16	607	29	17	1	10	1		12
Deep River												
Eastford												
Greenwich	.270	10/15	.190	10/16	705	29	12		16	1		17
Groton	.244	10/17	.183	22/17	705	30	18	3	8	1		12
Hartford	.306	10/18	.212	30/16	718	30	18	4	6	1	1	12
Morris	.225	10/18	.169	19/17	644	27	9	7	10	1		18
Middletown	.267	10/17	.223	10/18	703	30	18	3	7	2		12
New Britain	.235	5/15	.197	22/16	707	30	14	5	10	1		16
New Haven	.302	10/17	.231	20/16	708	30	15	4	8	2	1	15
Stamford	.230	10/15	.230	10/16	714	30	14	3	11	2		16
Waterbury	.252	10/17	.186	10/18	596	26	17	2	6	1		9
Windsor	.113	22/19	.113	22/20	415	18	16	1	1			2

[1]Time is given in the following format. The date of occurrence appears on the left side of the slash. The hour (EST) specifying the end of the averaging hour appears on the right side of the slash.

[2]Total days is the number of days with at least one valid reading.

TABLE VIII

CONNECTICUT OZONE - JULY - 1974

Towns	Max. 1-hr. value (ppm)	Time[1] of Max.	2nd High 1-hr. value (ppm)	Time[1] of 2nd High	Total# hourly values	Total Days[2]	# of days with max. 1-hr. reading in each range: .00 to .08	.081 to .099	.1 to .199	.2 to .299	.3 or Above	# Days with Maximum Above .08 ppm
Bridgeport	.210	31/15	.200	31/16q	741	31	15	8	7	1		16
Danbury	.157	2/14	.139	2/13	594	27	14	6	7			13
Deep River	.158	31/19	.158	31/20	155	7	5	1	1			2
Eastford												
Greenwich	.190	2/12	.190	22/15	712	30	11	4	15			19
Groton	.206	2/17	.195	4/16	738	31	15	6	9	1		16
Hartford	.221	2/17	.212	2/18	739	31	21	5	4	1		10
Morris	.160	18/15	.150	18/16	727	31	17	9	5			14
Middletown	.259	2/15	.243	2/16	743	31	13	7	9	2		18
New Britain	.225	2/16	.225	2/17	709	31	16	6	7	2		15
New Haven	.287	2/15	.236	2/16	396	18	5	5	6	2		13
Stamford	.206	4/13	.201	2/14	737	31	12	3	14	2		19
Waterbury	.249	2/17	.224	5/13	733	31	16	3	10	2		15
Windsor	.184	2/19	.163	2/20	623	27	24	1	2			3

[1]Time is given in the following format. The date of occurrence appears on the left side of the slash. The hour (EST) specifying the end of the averaging hour appears on the right side of the slash.

[2]Total days is the number of days with at least one valid reading.

TABLE VIII

CONNECTICUT OZONE - AUGUST - 1974

Towns	Max. 1-hr. value (ppm)	Time[1] of Max.	2nd High 1-hr. value (ppm)	Time[1] of 2nd High	Total# hourly values	Total Days[2]	# of days with max. 1-hr. reading in each range: .00 to .08	.081 to .099	.1 to .199	.2 to .299	.3 or Above	# Days with Maximum Above .08 ppm
Bridgeport	.188	24/13	.174	1/15	730	31	14	6	11			17
Danbury	.243	31.17	.243	31/18	602	26	8	6	11	1		18
Deep River	.202	13/16	.188	13/15	644	28	11	3	13	1		17
Eastford	.160	20/18	.160	20/19	705	30	12	11	7			18
Greenwich	.240	16/17	.240	31.15	744	31	10	4	15	2		21
Groton	.174	13/16	.165	13/17	740	31	17	4	9			13
Hartford	.146	2/12	.146	2/14	679	29	16	3	10			13
Morris	.174	2/15	.155	2/14	562	23	13	6	4			10
Middletown	.162	24/15	.122	24/14	711	31	18	4	9			13
New Britain	.171	2/11	.158	31/17	733	31	15	4	12			16
New Haven	.174	13/15	.169	13/16	535	25	13	3	9			12
Stamford	.212	24/15	.202	16/16	733	31	13	7	8	3		18
Waterbury	.187	2/13	.182	2/15	699	29	14	1	14			15
Windsor	.150	11/17	.136	11/18	720	30	25	2	3			5

[1]Time is given in the following format. The date of occurrence appears on the left side of the slash. The hour (EST) specifying the end of the averaging hour appears on the right side of the slash.

[2]Total days is the number of days with at least one valid reading.

TABLE VIII

CONNECTICUT OZONE - SEPTEMBER - 1974

Towns	Max. 1-hr. value (ppm)	Time[1] of Max.	2nd High 1-hr. value (ppm)	Time[1] of 2nd High	Total# hourly values	Total Days[2]	# of days with max. 1-hr. reading in each range .00 to .08	.081 to .099	.1 to .199	.2 to .299	.3 or Above	# Days with Maximum Above .08 ppm
Bridgeport	.197	12/13	.169	12/13	719	30	22	3	5			8
Danbury	.221	11/16	.189	12/16	518	23	14	3	5	1		9
Deep River	.193	13/16	.169	12/15	720	30	20	4	6			10
Eastford	.197	12/17	.193	13/18	719	30	21	4	5			9
Greenwich	.210	12/13	.190	11/13	708	29	19	1	8	1		10
Groton	.103	1/14	.100	11/14	535	24	19	2	3			5
Hartford	.175	11/17	.149	12/17	719	30	22	5	3			8
Morris	.085	12/14	.080	12/15	360	15	14	1				1
Middletown												
New Britain	.238	11/16	.200	11/17	658	28	20	3	4	1		8
New Haven	.188	12/14	.183	12/15	713	30	23	1	6			7
Stamford	.150	11/14	.146	12/13	720	30	21	4	5			9
Waterbury												
Windsor	.150	11/17	.136	11/18	720	30	25	2	3			5

[1]Time is given in the following format. The date of occurrence appears on the left side of the slash. The hour (EST) specifying the end of the averaging hour appears on the right side of the slash.

[2]Total days is the number of days with at least one valid reading.

TABLE IX

PHOTOCHEMICAL OXIDANTS

NUMBER OF HOURS ABOVE THE STANDARD BY MONTH AND TIME OF DAY

GREENWICH

	MID	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	TOTAL BY MONTHS
APR																									
MAY											2	2	6	7	14	6	5	4	2	1	1	1	1		52
JUN											3	11	12	13	14	13	13	10	7	4	1				101
JUL										5	8	12	12	13	15	12	11	7	6	3	2		2	1	109
AUG										1	1	7	9	15	17	14	12	12	9	4	2		1		104
SEPT									1	1		3	6	8	9	9	6	2							45
OCT															2	1	1								4
TOTAL BY HOURS									1	7	14	35	45	56	71	55	48	35	24	12	6	1	4	1	TOTAL 415

TABLE IX

PHOTOCHEMICAL OXIDANTS

NUMBER OF HOURS ABOVE THE STANDARD BY MONTH AND TIME OF DAY

NEW HAVEN

	MID	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	TOTAL BY MONTHS
APR																									
MAY													3	4	4	5	3	3	3	2					27
JUN												3	7	10	13	11	11	10	9	5	4	1	1		85
JUL										1	2	3	5	7	10	11	8	9	7	5	5	1			74
AUG											1	1	4	5	9	9	8	6	7	6	4	1	1		62
SEPT													1	4	6	7	7	7	2						34
OCT																	1	1							2
TOTAL BY HOURS										1	3	7	20	30	42	43	38	36	28	18	13	3	2		TOTAL 284

TABLE IX

PHOTOCHEMICAL OXIDANTS

NUMBER OF HOURS ABOVE THE STANDARD BY MONTH AND TIME OF DAY

HARTFORD

	MID	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	TOTAL BY MONTHS
APR																									
MAY											1	1	1	1	3	3	3	3	3	2	2				23
JUN											2	5	10	9	9	7	8	8	9	7	4	1	2	1	82
JUL				1	1						2	3	5	6	6	6	8	7	5	4	2	2			58
AUG												4	5	7	9	9	8	6	6	4	3	3			64
SEPT													2	2	2	5	5	5	4	2					27
OCT														1	1			1							3
TOTAL BY HOURS				1	1						5	13	23	26	30	30	32	30	27	19	11	6	2	1	TOTAL 257

TABLE IX

PHOTOCHEMICAL OXIDANTS

NUMBER OF HOURS ABOVE THE STANDARD BY MONTH AND TIME OF DAY

MORRIS DAM

	MID	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	TOTAL BY MONTHS
APR																									
MAY														1	1	1	1	1							5
JUN										1	5	6	8	9	12	10	12	9	9	7	3	3	2	1	97
JUL										2	2	5	4	5	10	9	5	2	3		1	1			49
AUG										1	3	4	5	6	5	6	7	4	1	1					43
SEPT															1										
OCT																									
TOTAL BY HOURS										4	10	15	17	21	29	26	25	16	13	8	4	4	2	1	TOTAL 195

TABLE IX

PHOTOCHEMICAL OXIDANTS

NUMBER OF HOURS ABOVE THE STANDARD BY MONTH AND TIME OF DAY

BRIDGEPORT

	MID	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	TOTAL BY MONTHS
APR																									
MAY													2	4	4	3									13
JUN												1	6	7	8	9	8	8	2	1					50
JUL												2	6	7	8	10	10	8	8	3	1				63
AUG												3	6	12	14	14	12	8	8	6	2				85
SEPT													4	4	6	7	6	2	2						31
OCT														1	1	1	1	1							5
TOTAL BY HOURS												6	24	35	41	44	37	27	20	10	3				TOTAL 247

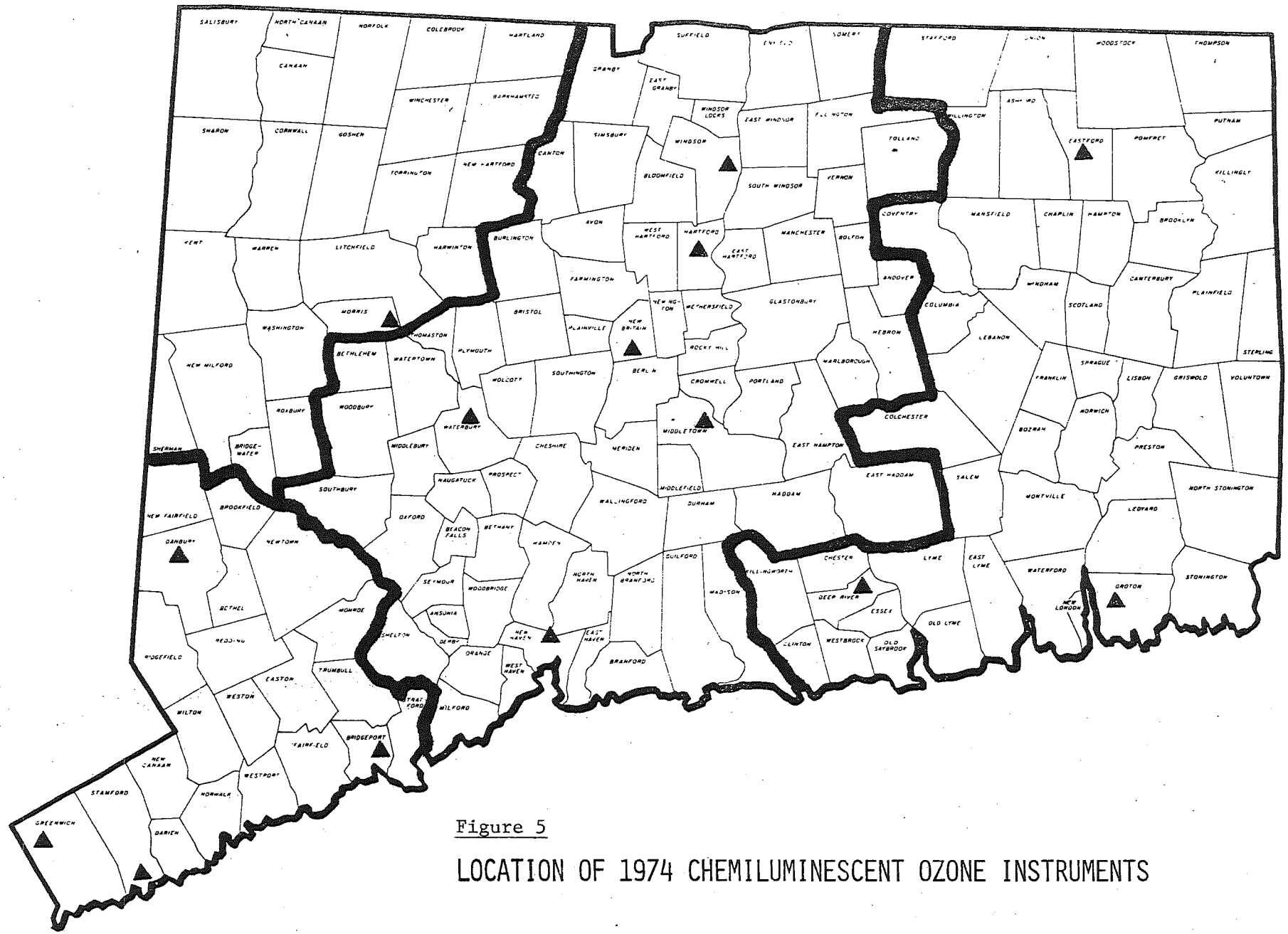


Figure 5

LOCATION OF 1974 CHEMILUMINESCENT OZONE INSTRUMENTS

II. AEROMETRIC DATA

D. Nitrogen Dioxide

I. Conclusions:

Nitrogen dioxide levels at all sampling sites in Connecticut were lower than the annual average air quality standard of 100 $\mu g/m^3$.

II. Discussion of data:

There were 39 nitrogen dioxide sites in 1974 as compared to 34 in 1973. The sites are distributed in a network which covers urban, residential and suburban locations.

III. Facts about Nitrogen Dioxide:

Nitrogen Dioxide (NO_2) is formed whenever air, which contains both oxygen (O_2) and nitrogen (N_2), is subjected to high temperatures. Thus any fuel combustion leads to the formation of NO_2; space heating, industrial and power generation, and automobile engines are the primary sources. Some fuels contain nitrogen compounds which also react during combustion to form NO_2. There are a few minor non-fuel-combustion sources of NO_2 as well.

Nitrogen dioxide in the atmosphere can aggravate respiratory problems. Nitrogen dioxide and other oxides of nitrogen (primarily nitric oxide) with which it exists in equilibrium, play a primary role in the production of photochemical oxidants.

IV. Method of Collection:

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 analyzed in the laboratory.

EPA has not formally approved any continuous method for measurement of NO_2, though reportedly an approval of one method is soon forthcoming.

The terms explained here are column headings on the following table.

TOWN	SITE	YEAR	MEAN	STD DEV	PCT OVER 100 $\mu g/m^3$	PCT OVER 282 $\mu g/m^3$
Town Name	Site Number assigned by D.E.P.	Calendar Year	Annual Arithmetic Mean or Average	Standard Deviation	Percent of days that could be expected to have concentrations above 100 µg/m if samples were taken every day instead of every sixth day	Percent of days that could be expected to have concentrations above 282 µg/m if samples were taken every day instead of every sixth day

TABLE X

POLLUTANT - NITROGEN OXIDES

TOWN	SITE	MEAN	STD DEVIATION	PERCENT OVER 100 $\mu g/m^3$	PERCENT OVER 282 $\mu g/m^3$
BERLIN	001	17.3	15.4	.0000	.00
BRIDGEPORT	001	56.3	23.4	2.87	.00
BRISTOL	001	33.3	23.6	.26	.00
BRISTOL	002	26.8	20.1	.02	.00
BRISTOL	003	28.6	19.7	.02	.00
BRISTOL	004	45.0	21.2	.47	.00
BURLINGTON	001	12.4	12.9	.00	.00
COLCHESTER	001	31.4	16.2	.00	.00
DANBURY	001	44.3	27.0	1.7	.00
EAST HARTFORD	001	57.7	19.8	1.7	.00
EAST HARTFORD	002	52.3	19.3	.62	.00
GREENWICH	001	55.8	38.5	13.57	.00
GREENWICH	004	39.9	23.5	.47	.00
GROTON	001	37.9	13.6	.00	.00
HARTFORD	002	53.4	29.8	5.48	.00
KENT	001	14.4	10.3	.00	.00

TABLE X

POLLUTANT - NITROGEN OXIDES

TOWN	SITE	MEAN	STD DEVIATION	PERCENT OVER 100 $\mu g/m^3$	PERCENT OVER 282 $\mu g/m^3$
LITCHFIELD	001	30.1	18.2	.01	.00
MANSFIELD	001	29.0	14.0	.00	.00
MANSFIELD	002	19.4	11.3	.00	.00
MERIDEN	002	42.9	28.7	2.27	.00
MIDDLETOWN	003	56.3	25.4	4.46	.00
MILFORD	001	49.0	31.5	5.48	.00
NAUGATUCK	001	46.3	24.1	1.39	.00
NEW BRITAIN	002	48.2	32.7	5.48	.00
NEW HAVEN	001	66.7	25.3	9.68	.00
NORWALK	005	72.1	31.5	18.41	.00
NORWICH	001	45.0	18.9	.19	.00
OLD SAYBROOK	001	62.0	30.7	11.51	.00
PUTNAM	002	28.3	12.8	.00	.00
STAMFORD	003	60.0	17.8	1.39	.00
STAMFORD	007	28.9	33.1	1.79	.00
STAMFORD	123	63.5	30.8	11.51	.00
STRATFORD	005	66.9	26.7	11.51	.00
TORRINGTON	001	36.0	18.7	.03	.00
VOLUNTOWN	001	17.8	11.1	.00	.00
WATERBURY	001	63.7	25.7	8.08	.00
WATERBURY	002	30.6	14.5	.00	.00
WATERBURY	003	38.0	21.2	.19	.00
WILLIMANTIC	001	41.9	19.5	.13	.00

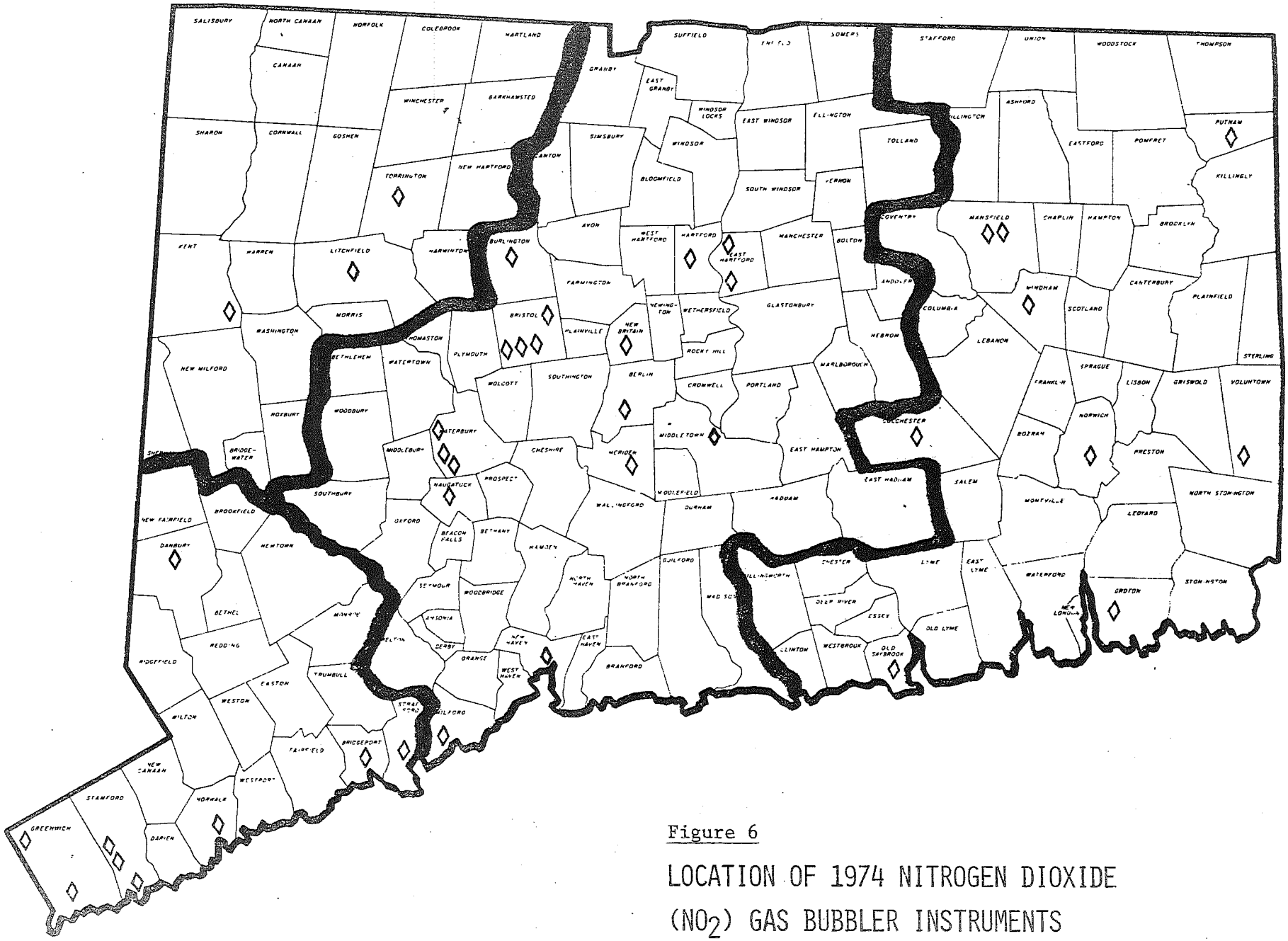


Figure 6

LOCATION OF 1974 NITROGEN DIOXIDE (NO_2) GAS BUBBLER INSTRUMENTS

II. AEROMETRIC DATA

E. Carbon Monoxide

I. Conclusions:

The eight hour ambient air quality standard was frequently exceeded in many places in Connecticut. The one hour standard however, was not exceeded.

II. Discussion of data:

The network of carbon monoxide monitors has expanded to seven sites since 1973 and will continue to grow in 1975. Attempts are made to place instruments in high traffic areas, though often special short-term projects must be undertaken to investigate particular problem areas. The data reported here represents only that from the permanent network of sites which will be used primarily for long-term trend evaluation.

III. Facts about Carbon Monoxide:

The major source of carbon monoxide (CO) is the automobile. This pollutant is found in ambient concentrations high enough to cause concern in areas of high traffic density. City centers, where tall buildings constrain air flow and where traffic jams are common, are of particular concern. In contrast to ozone, carbon monoxide is very much a local problem.

Carbon monoxide disperses to innocuous concentrations rapidly, and while it is fairly stable in the atmosphere, there is no evidence of a long-term global build-up of CO.

IV. Method of Collection

The Air Monitoring Unit uses instruments employing non-dispersive infrared techniques (NDIR) to measure carbon monoxide levels. The instruments measure and record instantaneous CO levels continuously.

TABLE XI

CO ANNUAL SUMMARY

Towns	Maximum Annual 8-hr. Average	Time[1] of Maximum 8-hr.	2nd High Annual 8-hr. Average	Time[1] of 2nd High 8-hr.	Maximum Annual 1-hr. Average	Time[2] of Maximum 1-hr.	2nd High Annual 1-hr. Average	Time[2] of 2nd High 1-hr. Average
Bridgeport	20.3	1/15/19	19.8	1/24/01	27.0	1/10/14	25.0	1/15/15
Greenwich	19.4	3/04/14	19.2	1/15/21	40.0	2/13/08	35.0	12/16/17
Hartford 07	16.9	9/25/02	14.5	3/24/23	28.0	3/20/15	21.0	6/23/24
Hartford 09	13.0	12/13/14	11.0	11/18/22	22.0	11/18/19	18.5	12/13/07
New Britain	25.1	6/21/24	24.2	6/22/12	28.0	6/21/23	28.0	6/22/06
Norwalk	16.0	11/19/24	14.6	11/24/02	25.0	11/25/08	22.0	10/24/08
Stamford	12.9	6/27/10	12.3	6/27/02	15.0	10/23/08	15.0	10/31/19

[1]Time of 8-hr. averages is reported as follows: Reading from left to right, the first number indicates the month, the middle number indicates the day within that month and the last indicates the hour (EST) specifying the end of the 8-hr. averaging period.

[2]Time of 1-hr. averages is reported as follows: Reading from left to right, the first number indicates the month, the middle number indicates the day within that month and the last indicates the hour (EST) specifying the end of the 1-hr. averaging period.

Note: All concentrations are in p.p.m.

TABLE XII

CO 8-HR. MAXIMUM BY MONTHS

Towns	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bridgeport	20.3	17.1		19.1	16.5	12.4	7.6	7.9	15.9	17.9	18.3	13.1
Count[1]	647	34		475	607	597	743	696	717	730	687	665
Greenwich	19.2	14.6	19.4	10.8	6.9	4.8	4.1	6.9	9.6	9.6	11.2	16.3
Count	722	667	732	720	732	720	744	728	691	744	598	566
Hartford 07	8.5		14.5	11.2	6.2	4.8	4.1	6.8	16.9	5.8	7.6	8.4
Count	504		585	683	722	680	740	681	665	519	660	656
Hartford 09									5.4	8.1	11.0	13.0
Count									81	178	719	743
New Britain				19.7	18.8	25.1	17.8	13.5				
Count				676	662	715	709	489				
Norwalk							7.3	4.9	8.2	11.6	16.0	14.4
Count							482	742	719	730	429	726
Stamford						12.9	8.3	4.0	3.1	11.8	9.6	10.0
Count						712	715	474	656	433	266	247

[1]Count is the number of valid 1-hr. readings within the month.

Note: All concentrations are in p.p.m.

TABLE XIII

CO 1-HR. MAXIMUM BY MONTHS

Towns	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bridgeport	27.0	17.5		23.8	17.0	13.5	9.0	21.5	18.5	25.0	22.0	18.0
Time[1]	10/14	28/06		18/06	3/07	19/08	19/12	27/08	24/20	29/23	24/23	6/18
Greenwich	27.5	40.0	30.0	25.0	15.0	12.0		20.0	30.0	24.0	25.0	35.0
Time	15/16	13/08	6/07	3/07	23/15	8/07		19/16	26/06	23/08	27/16	6/17
Hartford 07	13.0		28.0	20.0	12.5	21.0	7.5	9.5	20.0	9.0	15.0	12.0
Time	4/15		20/15	3/08	3/16	23/24	24.04	30/16	25/08	21/16	18/19	6/18
Hartford 09									7.5	13.0	22.0	18.5
Time									27/16	25/16	18/19	13/07
New Britain				22.0	23.0	28.0	20.5	23.5				
Time				2/22	28/06	21/23	26/10	12/16				
Norwalk							10.5	7.5	12.5	22.0	25.0	20.0
Time							30/17	7/06	19/17	24/08	25/08	2/09
Stamford						13.0	9.0	8.0	7.5	15.0	13.0	14.0
Time						27/04	1/21	8/13	16/07	23/08	1/17	23/08

[1]For all sites, time is given in the following format: The date of occurrence appears on the left side of the slash. The hour (EST) specifying the end of the averaging hour appears on the right side of the slash.

Note: All concentrations are in p.p.m.

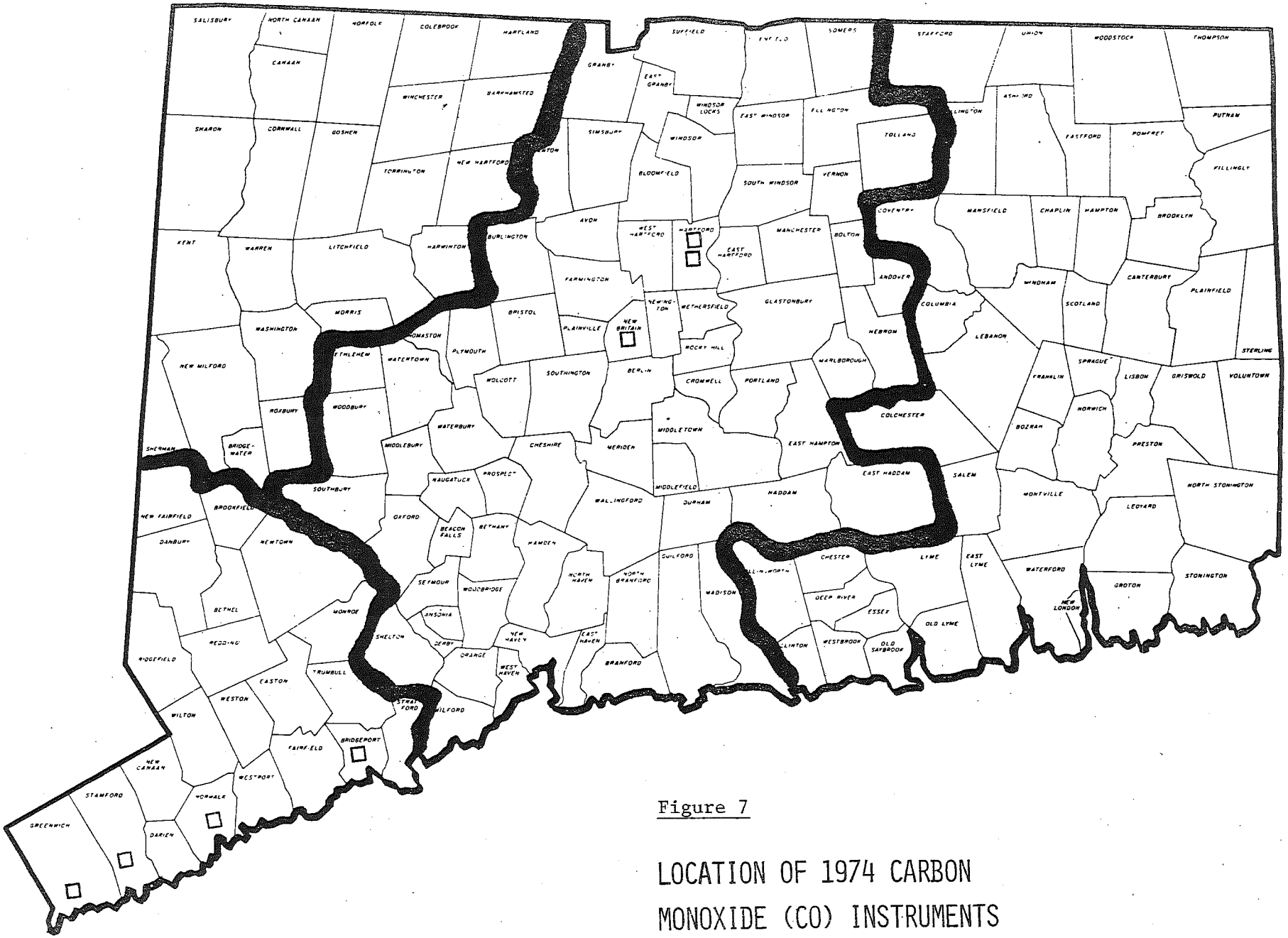


Figure 7

LOCATION OF 1974 CARBON MONOXIDE (CO) INSTRUMENTS

III. WIND ROSE COMPARISON

The effects of wind are quite important in air pollution studies. Wind disperses air pollution and is a fundamental factor in the design of models of air pollution like the Air Quality Display Model (AQDM).

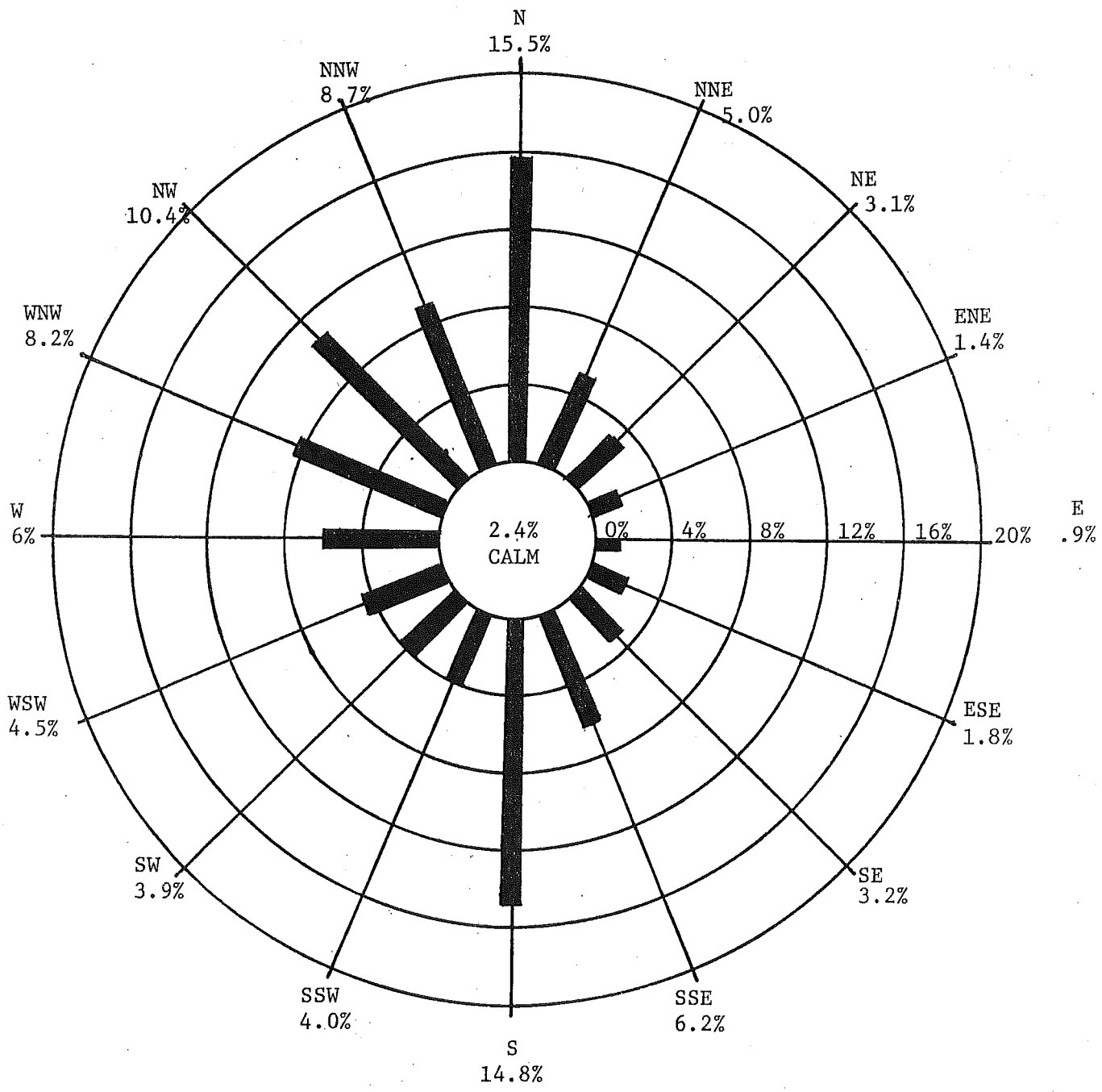
The direction of wind is recorded every 3 hours at Bradley International Airport and at Bridgeport Airport. Each measurement falls into one of sixteen compass point directions.

The number of observations at each compass point and the total number of observations are both known, so we can calculate the percent of time the wind direction was from each point. A wind rose is a diagram in which a bar is drawn from the center of the circle toward each point. The length of the bar represents the percent of readings from that direction. During a calm the wind has no direction so the percent calm is noted in the center of the diagram.

For the wind rose comparison, a line is drawn to connect the ends of adjacent bars, thus forming an irregular shape. The bars themselves have not been drawn in so that the shapes from different time intervals can be compared on the same chart. (Figures 10 and 11).

The Chi-square test is used at each site to test the hypothesis that the 1965-72 wind rose is the same as the 1974 wind rose. In both cases the difference was statistically very significant ($\rho<.005$).

Figure 8



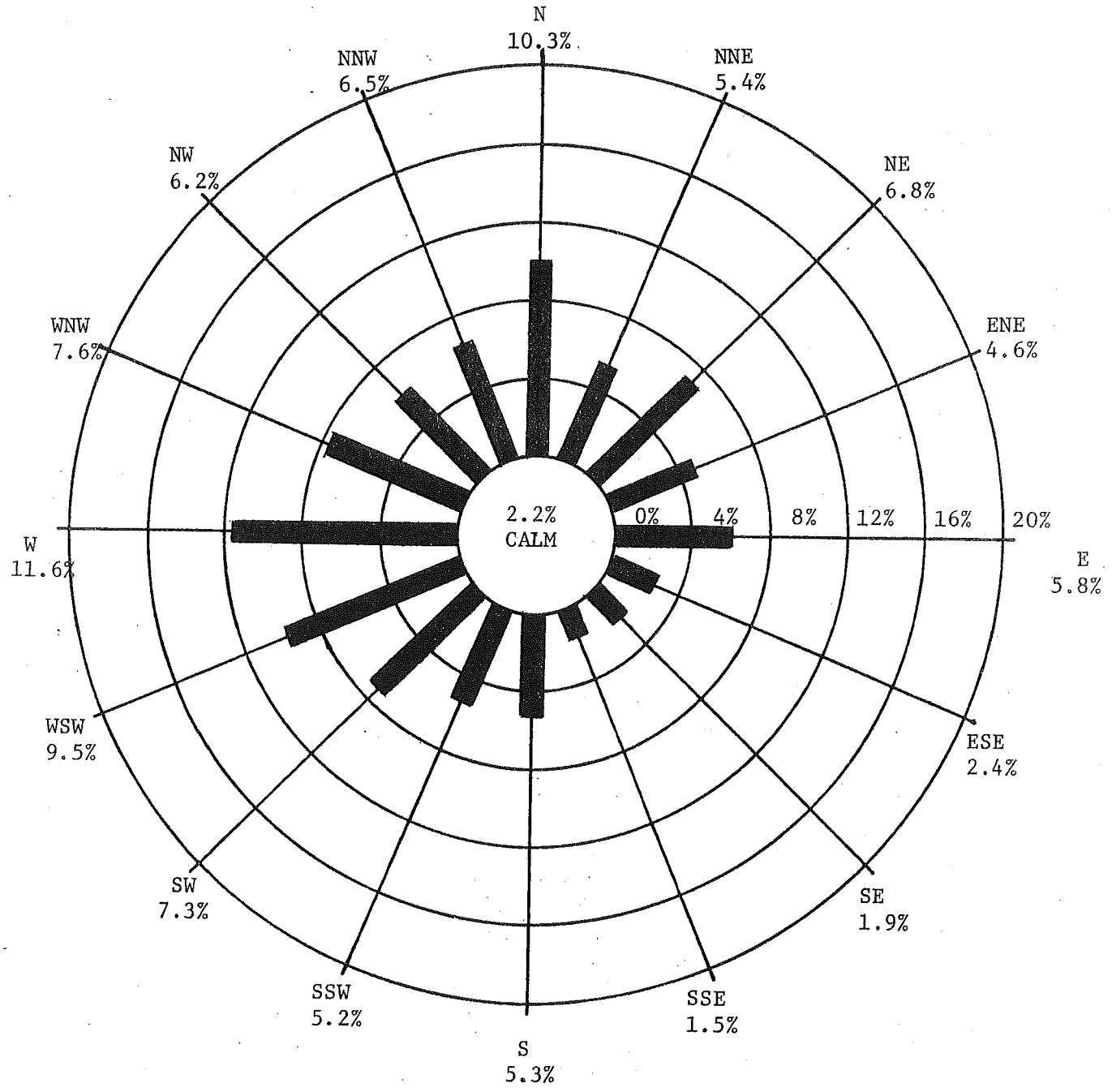
WIND ROSE

BRADLEY FIELD

ANNUAL 1974

WIND FREQUENCY APPEARS BENEATH EACH DIRECTIONAL ABBREVIATION

Figure 9



WIND ROSE

BRIDGEPORT AIRPORT

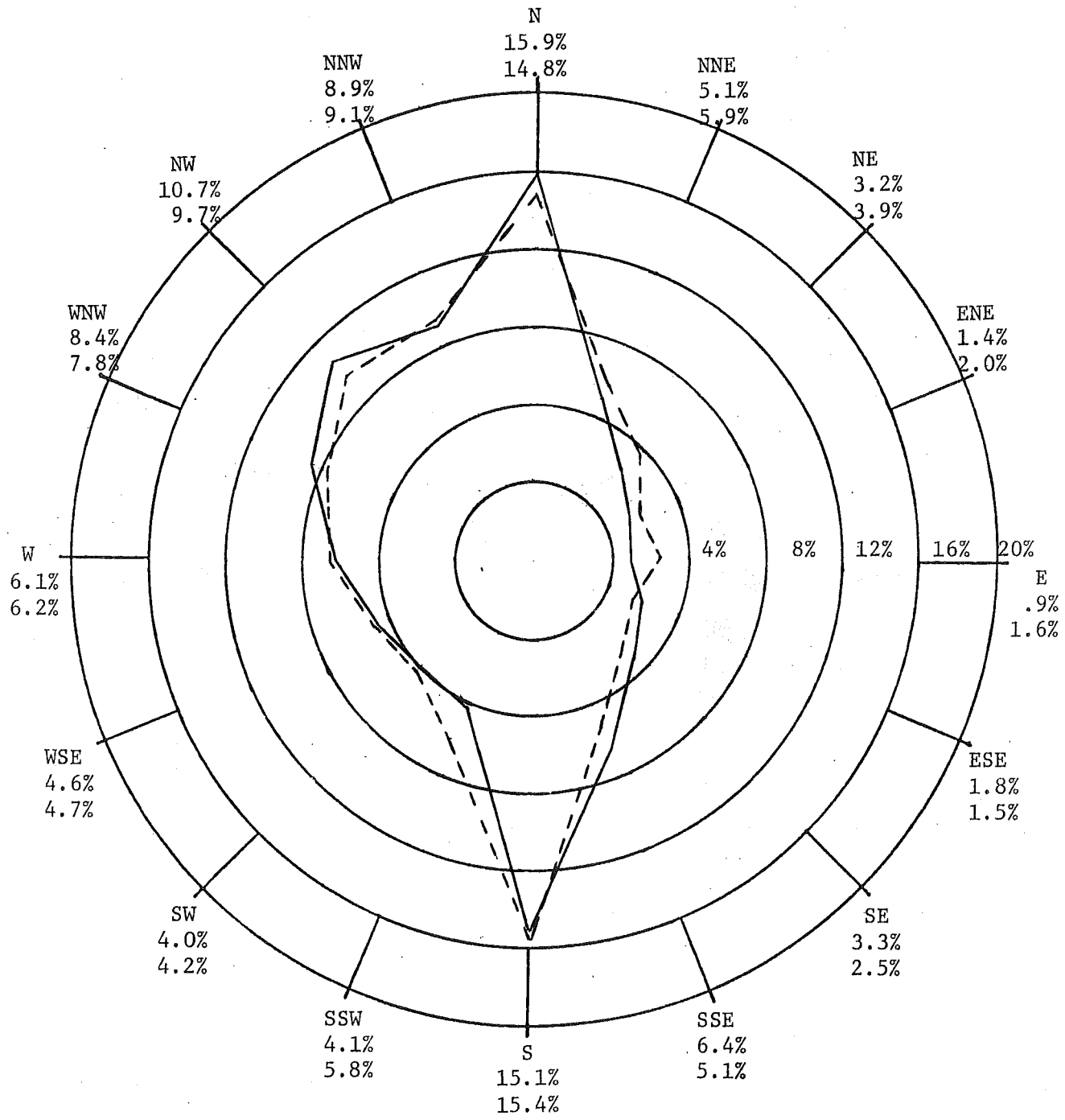
ANNUAL 1974

WIND FREQUENCY APPEARS BENEATH EACH DIRECTIONAL ABBREVIATION

WIND ROSE COMPARISON

BRADLEY FIELD

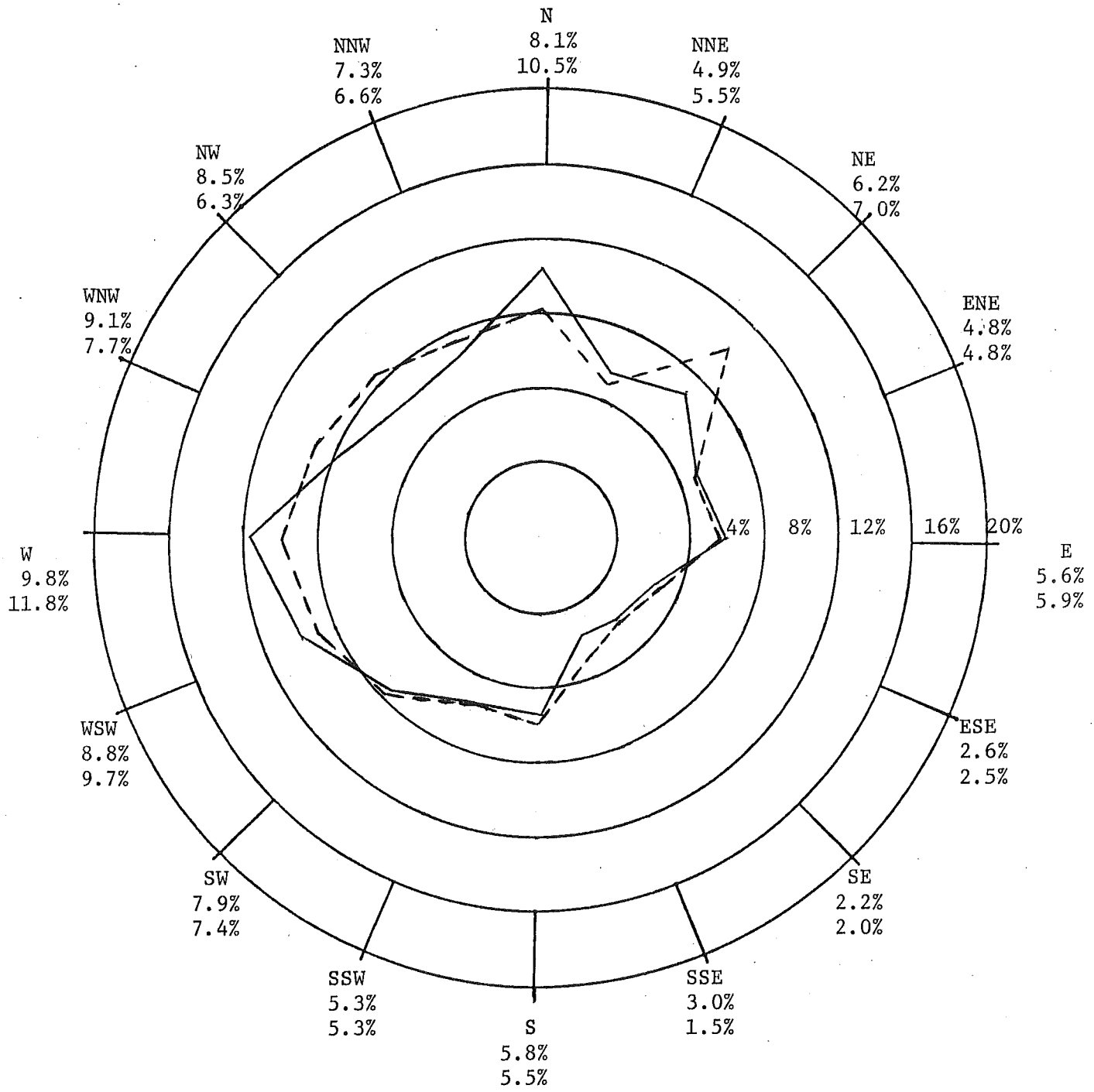
Figure 10



Key: Scale is indicated by numbers to the right of the concentric circles.
---- Values from the 1965-1972 annual wind rose.
____ Values from the 1974 annual wind rose.
For the 1965-1972 annual wind rose, frequency appears as the upper figure beneath each directional abbreviation.
For the 1974 annual wind rose, frequency appears as the lower figure beneath each directional abbreviation.

WIND ROSE COMPARISON
BRIDGEPORT AIRPORT

Figure 11



Key: Scale is indicated by numbers to the right of the concentric circles.
---- Values from the 1965-1972 annual wind rose.
____ Values from the 1974 annual wind rose.
For the 1965-1972 annual wind rose, frequency appears as the upper figure beneath each directional abbreviation.
For the 1974 annual wind rose, frequency appears as the lower figure beneath each directional abbreviation.