

EVALUATION OF THE STATE IMPLEMENTATION PLAN FOR
ATTAINMENT OF NATIONAL AMBIENT AIR QUALITY STANDARDS
TOTAL SUSPENDED PARTICULATES
NEW JERSEY - NEW YORK - CONNECTICUT AIR QUALITY CONTROL REGION
(043)
NEW YORK PORTION

PREPARED BY
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION II, AIR BRANCH
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I. AQCR Characteristics

A. Political Boundaries

The New Jersey - New York - Connecticut Interstate Air Quality Control Region (AQCR) consists of New York City and surrounding areas in the three-state region. The counties and townships included in the AQCR are:

NEW JERSEY-NEW YORK-CONNECTICUT INTERSTATE AQCR

In Connecticut

Bethel Township
Bridgeport Township
Brookfield Township
Danbury Township
Darien Township
Easton Township
Fairfield Township

Greenwich Township
Monroe Township
New Canaan Township
New Fairfield Township
Newton Township
Norwalk Township
Redding Township

Ridgefield Township
Stanford Township
Stratford Township
Trumbull Township
Weston Township
Westport Township
Wilton Township

In New York

Bronx County
Kings County
Nassau County

New York County
Queens County
Richmond County

Rockland County
Suffolk County
Westchester County

In New Jersey

Bergen County
Essex County
Hudson County

Middlesex County
Monmouth County
Morris County

Passaic County
Somerset County
Union County

This report will only discuss the attainment status of the New York State portion of the AQCR. The New York portion is shown in Figure 1. In 1973, the estimated population of the entire AQCR was 17,354,000. The variations in population density of the AQCR are shown in Figure 2.

B. Physical Description

The New Jersey - New York - Connecticut AQCR has an area of 37,764 square kilometers (14,580 square miles) of which the City of New York covers about 800 square kilometers (300 square miles). The City is located on the Atlantic coastal plain at the mouth of the Hudson River. The terrain is flat and diversified by numerous waterways; all but one of the City's five boroughs are situated on is-

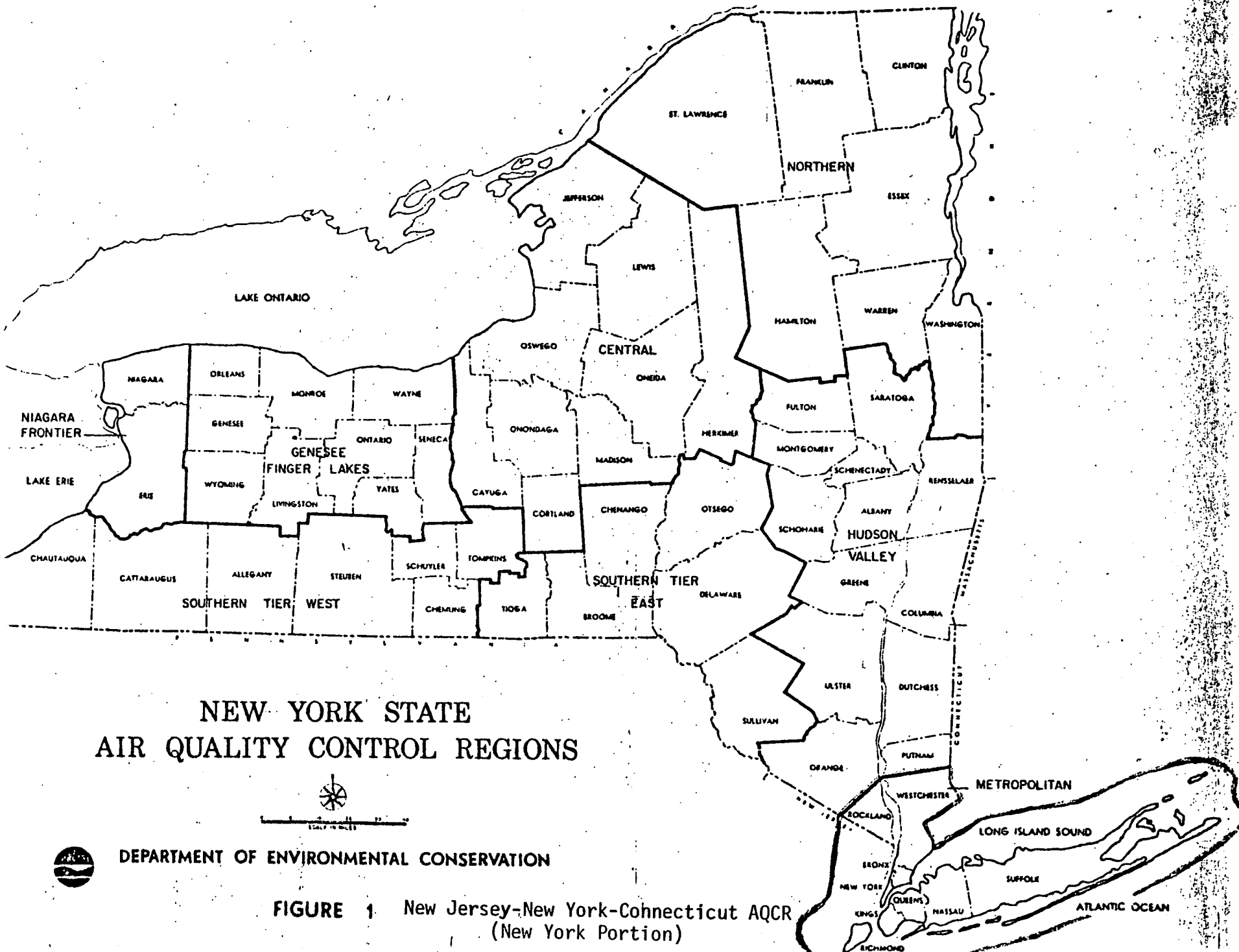
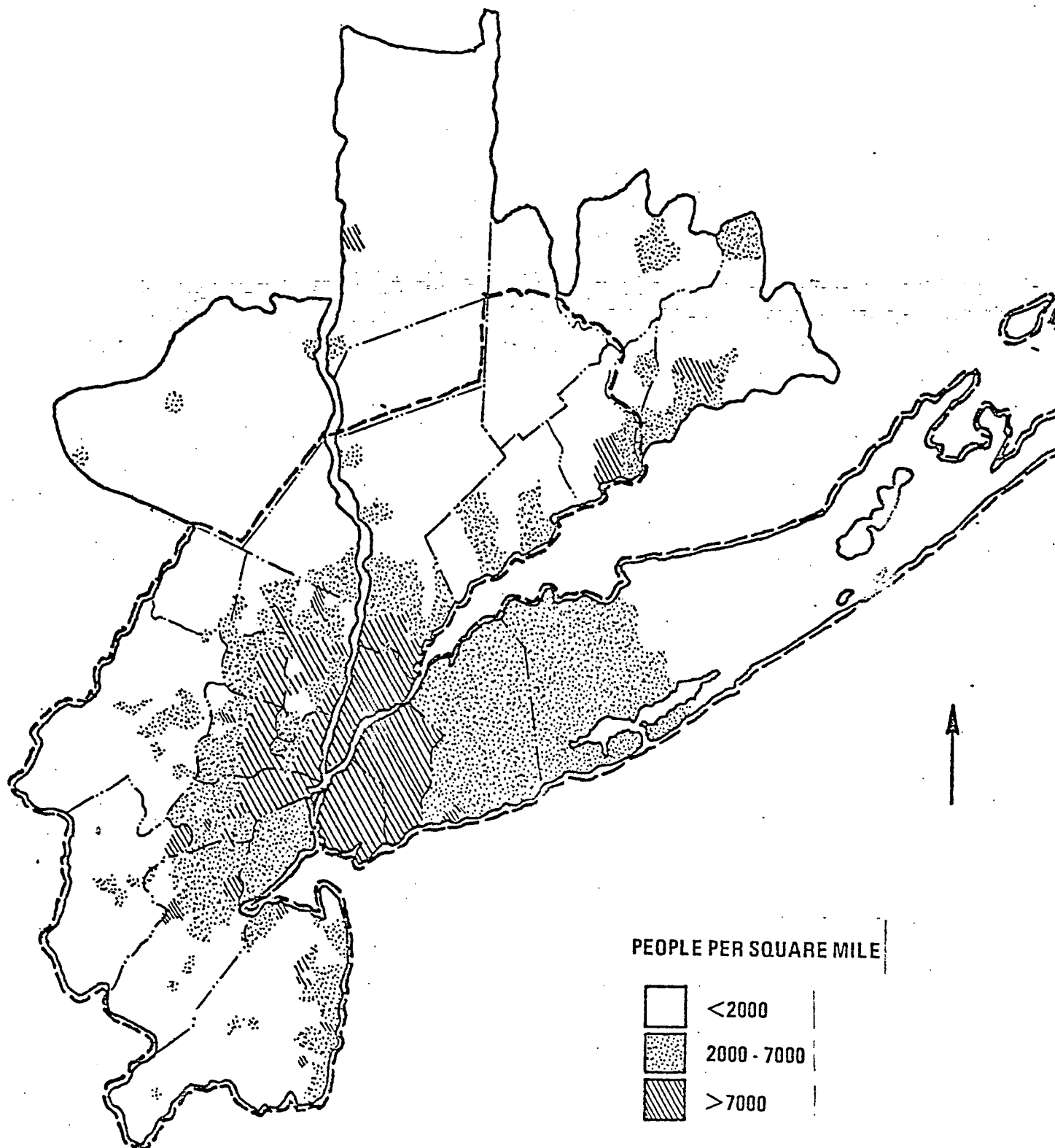


Figure 2

POPULATION PATTERN FOR N.Y. - N.J. - CONN. AQCR, 1970



lands. Elevations range from less than 15 meters (50 feet) over most of Manhattan, Brooklyn, and Queens to almost 100 meters (300 feet) in the northern part of Manhattan and the Bronx, and over 120 meters (400 feet) in Richmond (Staten Island). Extensive suburban areas of the Region surround the City proper. At 50 kilometers (30 miles) to the west and northwest of New York City mountains rise to 450 meters (1500 feet), while to the north, hills in upper Westchester rise to 250 meters (800 feet). In all other directions the surface is either water or low-lying land.

The climate of the area can best be defined as modified continental. Weather situations that make up the climate pattern move from a generally westerly direction. The maritime influence is shown by the uniform occurrence of precipitation throughout the year in contrast to the summertime concentration of rainfall that is typical of an inland regime. The maritime influence also moderates temperatures in a manner that produces differences between "in-city" and suburban locations that are often of considerable magnitude. The urban "heat-island" also produces in-city and suburban climatological differences.

Other factors influencing the climate of the area are coastal storms that produce strong winds and heavy precipitation and low-pressure systems, also associated with unsettled weather, that frequently pass through the area. The prevailing westerly winds experienced are illustrated by wind roses from John F. Kennedy and LaGuardia airports, Figures 3 and 4 respectively.

Annual mean temperature in New York City is somewhat higher than that of most places at the same latitude in the United States, except Pacific coastal localities. In summer, New York City may be hot, but extended heat waves are rare. Autumn is milder than spring.

II. Problem Definition

The primary National Ambient Air Quality Standard (NAAQS) for total suspended particulates is scheduled by regulation for attainment in the New York portion of the

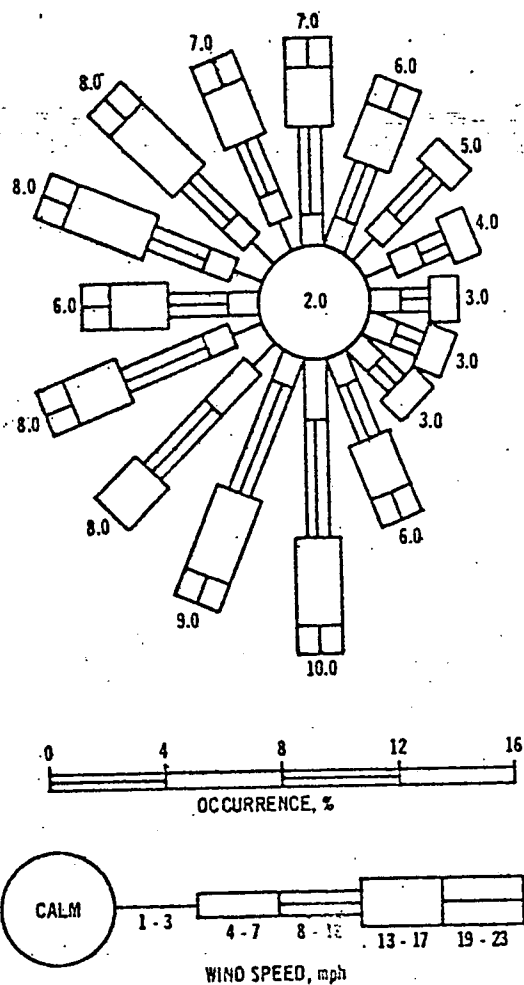


Figure 3 Surface climatologic wind rose for John F. Kennedy Airport, New York. (Percentage of time wind is in direction shown.)

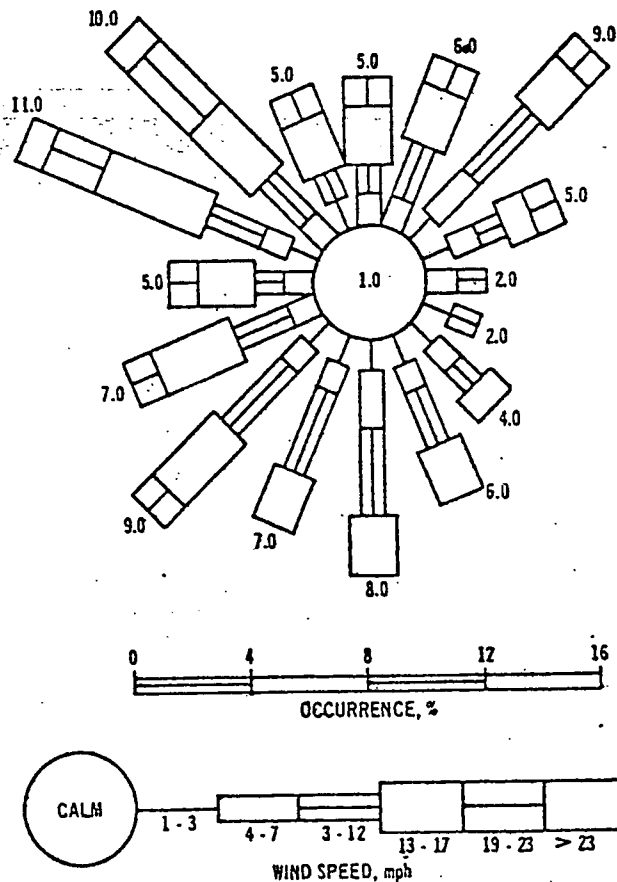


Figure 4 Surface climatologic wind rose for La Guardia Airport, New York. (Percentage of time wind is in direction shown.)

NJ-NY-Conn. AQCR by 1977. As of 1975, five monitoring sites exhibited concentrations which contravened the standard. The locations of these sites are listed in Table 1.

All five sites which exceeded the primary standard, contravened the annual standard of 75 ug/m^3 . One of those sites in the NY portion of the AQCR also violated the primary 24-hour standard for TSP of 260 ug/m^3 , not to be exceeded more than once per year. The secondary 24-hour standard was exceeded at numerous locations in New York City.

An historical review of the air quality at the five sites contravening the primary TSP standard is shown graphically in Figures 5 through 9 where the running annual averages at these sites are plotted for the period 1970 to 1975.

III. Network Adequacy

The network of 89 TSP monitoring sites in the New York portion of the AQCR satisfies the Federal requirements of 27 stations as determined by 40 CFR 51.17 and also satisfies the commitment of 78 stations as proposed in the State Implementation Plan. The location of the TSP monitoring sites are shown in Figure 10.

The network in the City of New York is operated for the most part by the New York City Department of Air Resources (NYCDAR). The network in the surrounding counties (Nassau, Rockland, Suffolk and Westchester) is operated by the New York State Department of Environmental Conservation (NYSDEC) in cooperation with the county agencies. Most monitoring sites are representative of population exposure to area and point sources of particulates.

The annual average TSP concentrations at the monitoring sites operating in the AQCR from 1970 through 1975 are presented in Table 2 and summarized in Table 3. Table 3 includes a combined index which describes the overall trend of particulate levels in the AQCR. This index compensates for monitoring sites terminating and stations beginning during the period of analysis. The table includes a normalized combined index which is the ratio of the base year index (1970) to succeeding years.

Table 1
TSP Sites Exceeding the Primary NAAQS
1975

<u>Site ID Nos. and Address</u>	<u>UTM Coordinates</u>	
334680017H01 (17) Public School 371 Fourth Ave. & 36th Street Brooklyn, New York	Northing	4500600
	Easting	584100
334680040H01 (7) Bowery Bay Sewage Treatment Plant 41st Street & Berrian Boulevard Queens, New York	Northing	4514600
	Easting	593300
334680022H01 (6) Samuel Gompers High School 445 Southern Boulevard Bronx, New York	Northing	4503500
	Easting	595000
334680014H01 (00) NYCDAR Laboratory 170 East 121st Street New York, New York	Northing	4517000
	Easting	589500
334680033H01 (33) Fresh Kills Sanitary Landfill Muldoon Avenue Staten Island, New York	Northing	4491900
	Easting	568000

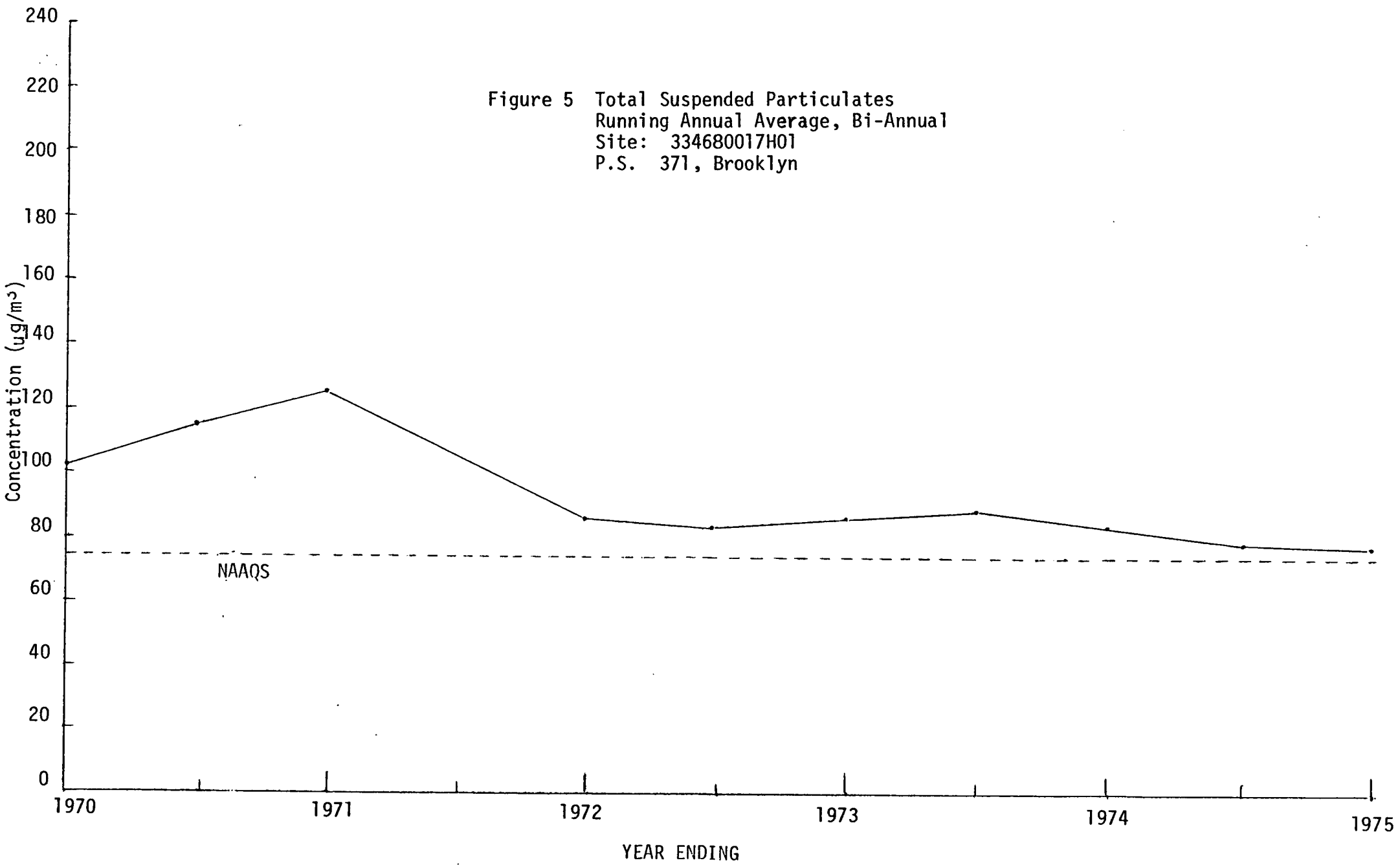
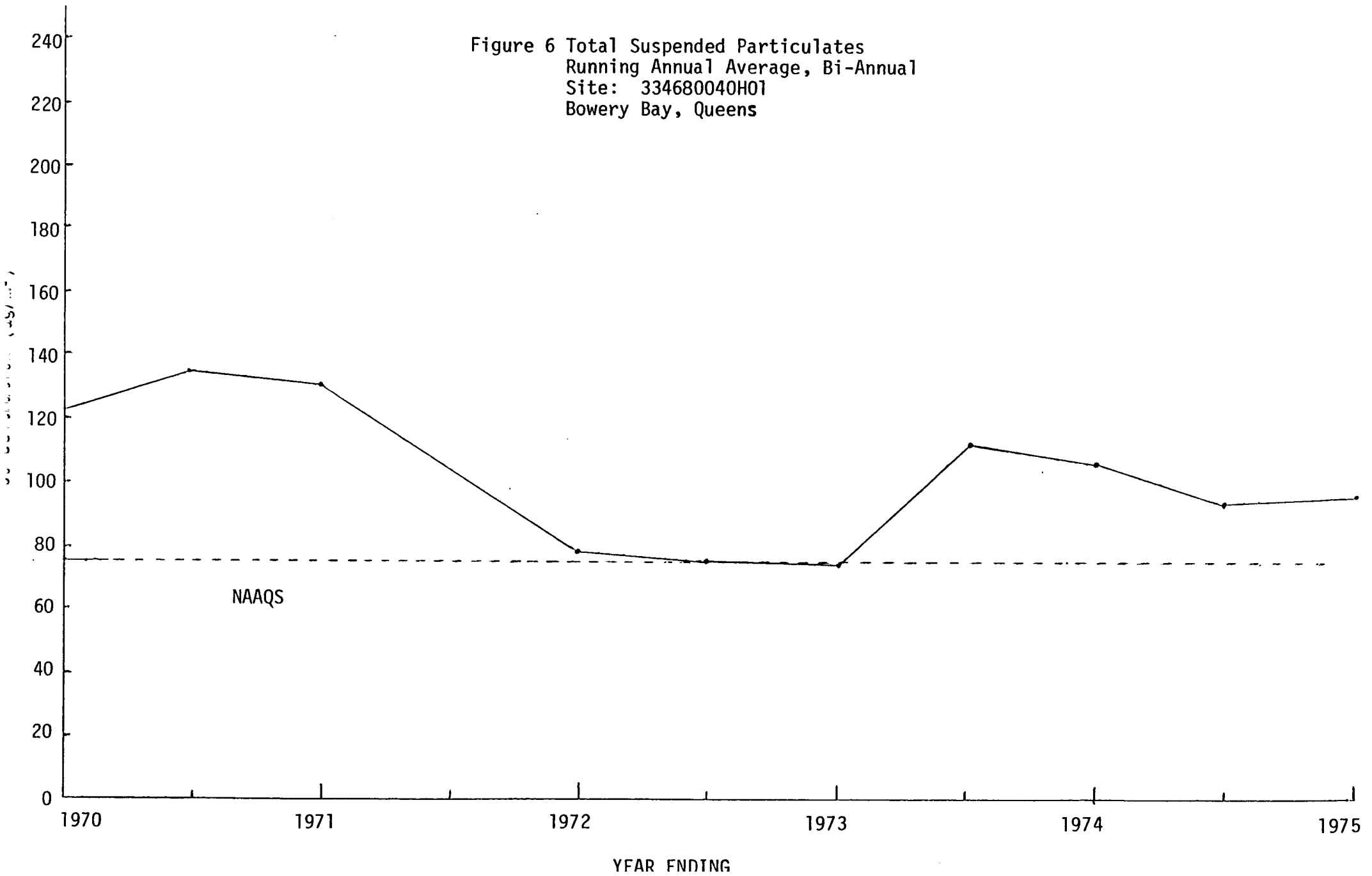
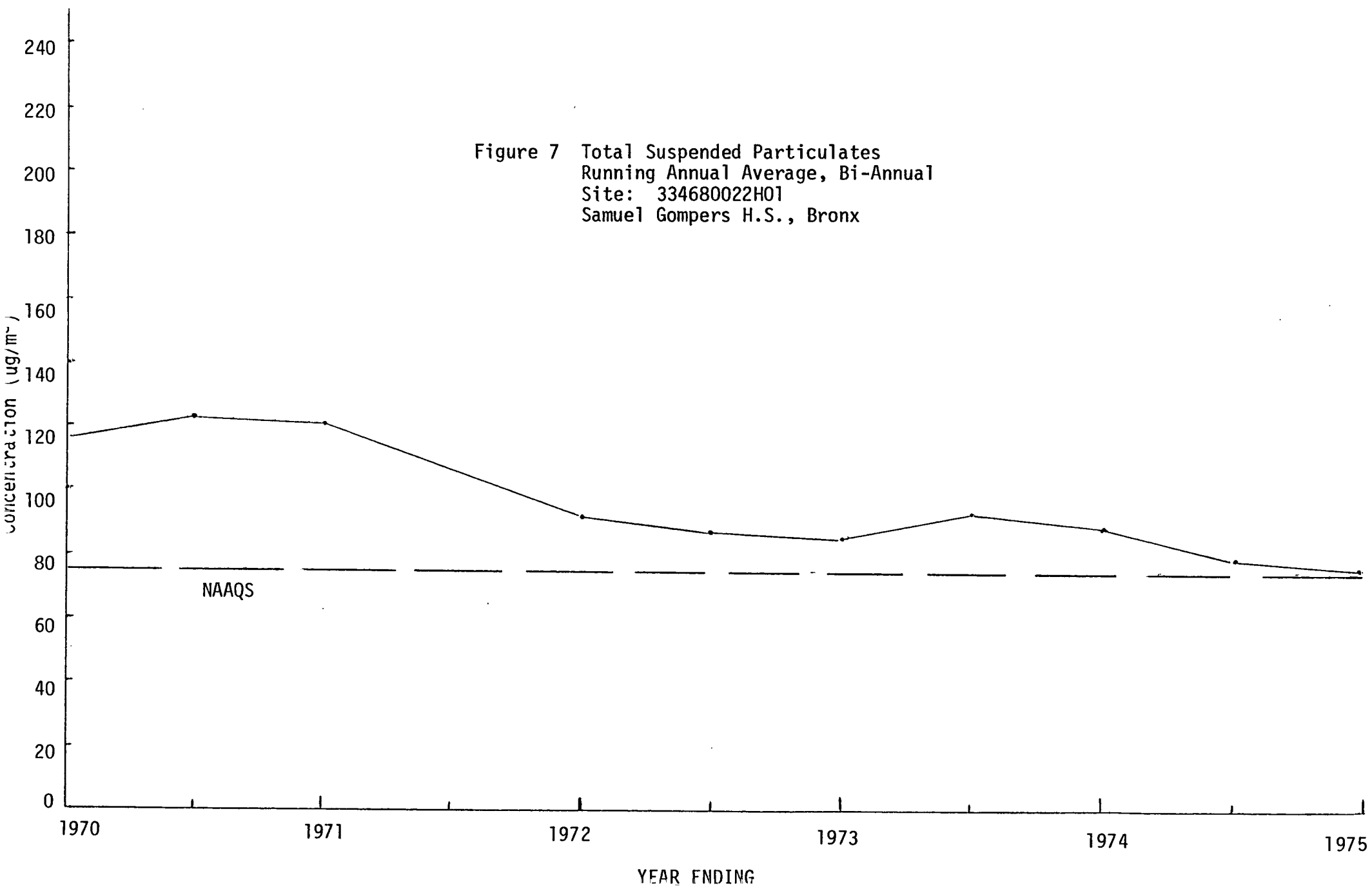


Figure 6 Total Suspended Particulates
Running Annual Average, Bi-Annual
Site: 334680040H01
Bowery Bay, Queens





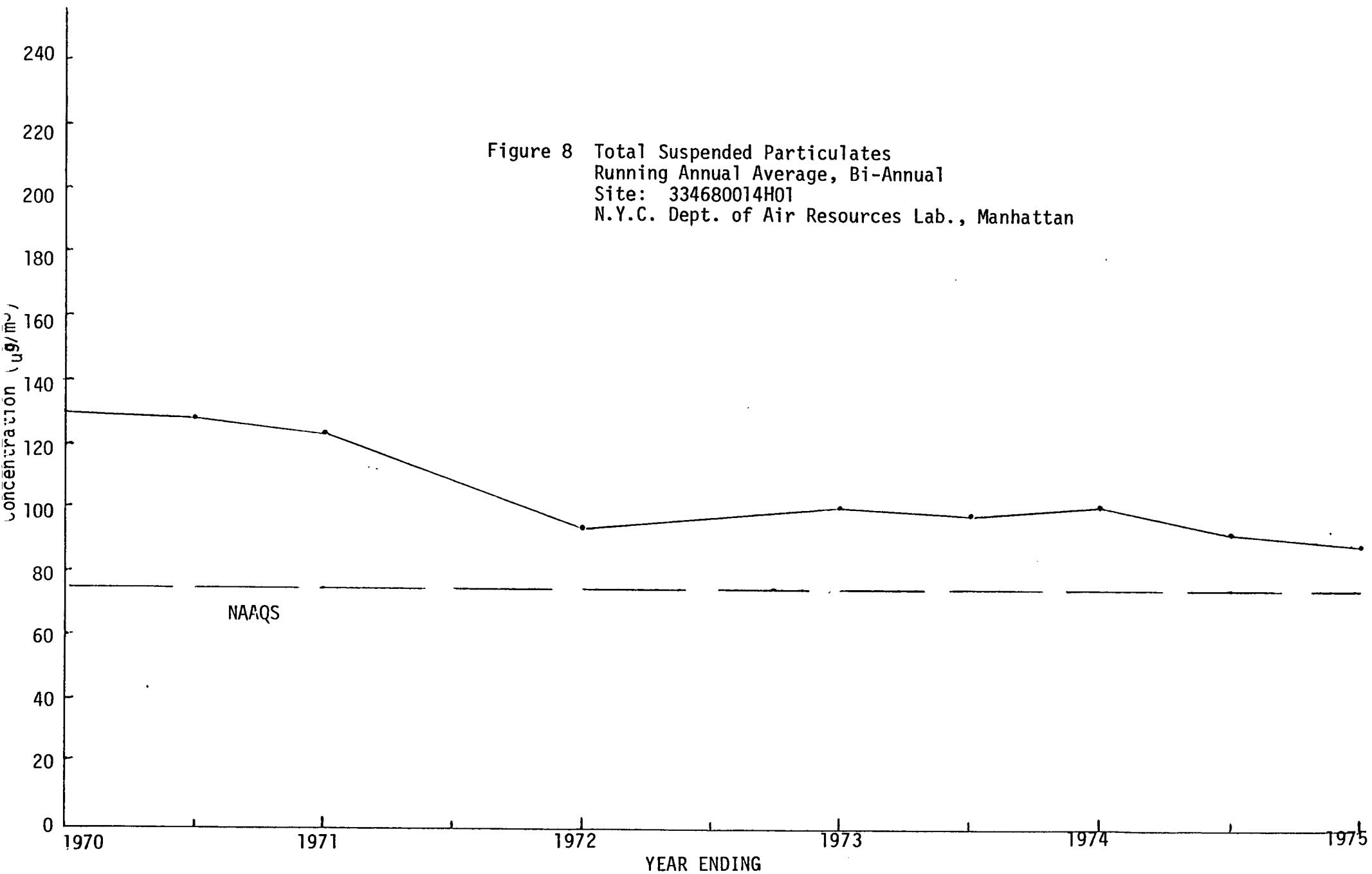


Figure 9 Total Suspended Particulates
Running Annual Average, Bi-Annual
Site: 334680033H01
Fresh Kills, Staten Island

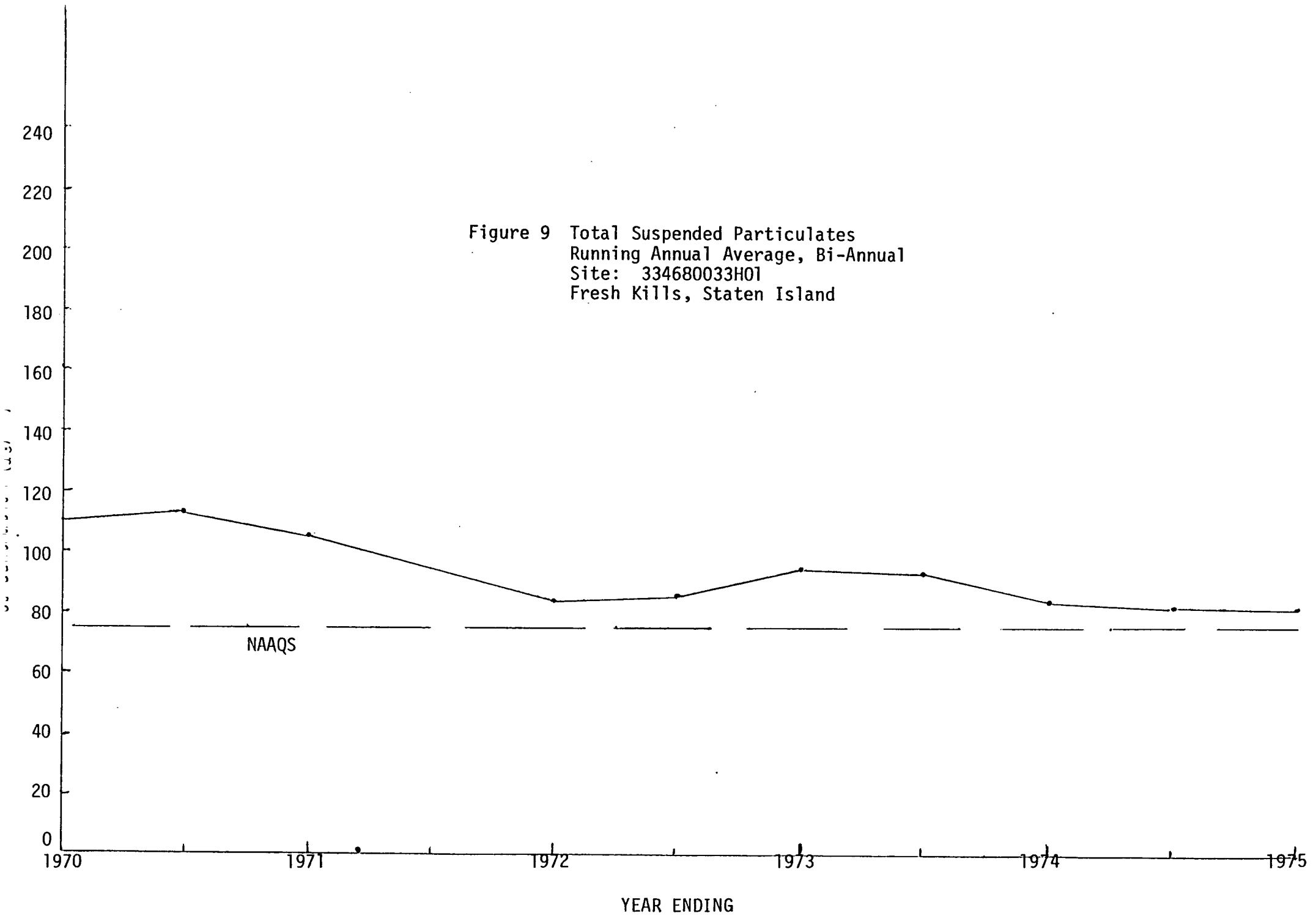


Figure 10
TSP MONITORING STATIONS IN N.Y. - N.J. - CONN. AQCR



Air Quality Report

Pollutant: Total Suspended Particulates
National Ambient Air Quality Standards

?	=	failed to meet average criteria
T	=	station terminated

Table 2

Air Quality Report

AQCR: New Jersey-New York-Connecticut
Attainment Date: 1977

Pollutant: Total Suspended Particulates
National Ambient Air Quality Standards

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? = failed to meet average criteria

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r = station terminated

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* 50th Percentile

Table 2

Air Quality Report

AQCR: New Jersey-New York-Connecticut
 Attainment Date: 1977

Pollutant: Total Suspended Particulates
 National Ambient Air Quality Standards

Monitoring Station Location				Annual Geometric Mean ug/m ³ (NAAQS = 75 ug/m ³)								Comments
PA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
34680040H01 7)	Queens	New York City	Center City	122*	130*	78*	74*	106*	96			2nd 24-hour Max. 275 ug/m ³
34680008H01 3)	Queens	New York City	Center City	81*	85*	68*	81*	T				
34680042H01 12)	Queens	New York City	Center City	109*	115*	90*	75*	77*	73			
34680041H01 3)	Queens	New York City	Center City Residential	102*	112*	72*	63*	77*	63			
34680004H01 4)	Queens	New York City	Center City Residential	86*	83*	59*	57*	60*	59			
34680015H01 5)	Queens	New York City	Center City Residential	64*	76*	55*	54*	59*	48			

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* 50th Percentile

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National Ambient Air Quality Standards

Monitoring Station Location				Annual Geometric Mean ($\mu\text{g}/\text{m}^3$) (NAAQS = $75 \mu\text{g}/\text{m}^3$)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
334680016H01 (16)	Queens	New York City	Center City Residential	78*	80*	67*	55*	66*	59			
334680020H01 (20)	Queens	New York City	Center City	92*	99*	75*	72*	76*	67			
334680043H01 (22)	Queens	New York City	Center City Residential	92*	T							
334680044H01 (23)	Queens	New York City	Center City Residential	80*	77*	63*	62*	58*	62			
334680047H01 (28)	Queens	New York City	Center City Residential	88*	93*	79*	110*	T				
334680029H01 (29)	Queens	New York City	Center City Residential	82*	78*	64*	51*	57*	57			
334680030H01 (30)	Queens	New York City	Center City Residential	74*	76*	58*	52*	56*	51			

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Monitoring Station Location				Annual Geometric Mean (ug/m ³) (NAAQS = 75 ug/m ³)								Comments
PA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
334680011H01 (11)	Kings	New York City	Center City	105*	112*	99*	82*	84*	73			
334680017H01 (17)	Kings	New York City	Center City	102*	125*	86*	87*	84*	77			
334680018H01 (18)	Kings	New York City	Center City Residential	110*	140*	64*	54*	55*	52			
334680019H01 (19)	Kings	New York City	Center City	102*	100*	82*	70*	82*	66			
334680021H01 (21)	Kings	New York City	Center City	98*	95*	65*	74*	76*	65			
334680045H01 (24)	Kings	New York City	Center City	86*	90*	72*	70*	57*	59			

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EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
334680025H01 (25)	Kings	New York City	Center City Residential	88*	100*	73*	T					
334680007H01 (26)	Kings	New York City	Center City	84*	78*	61*	58*	72*	62			
334680046H01 (27)	Kings	New York City	Center City	82*	83*	65*	67*	68*	61			
334680064H01 (41)	Kings	New York City	Center City	-	-	-	70*	60*	57			

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Monitoring Station Location				Annual Geometric Mean ($\mu\text{g}/\text{m}^3$) (NAAQS = $75 \mu\text{g}/\text{m}^3$)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
334680006H01 (1)	Bronx	New York City	Center City Residential	86*	98*	75*	63*	63*	57			
334680003H01 (3)	Bronx	New York City	Center City	101*	120*	93*	84*	85*	75			
334680039H01 (4)	Bronx	New York City	Center City	80*	85*	69*	63*	62*	55			
334680022H01 (6)	Bronx	New York City	Center City	116*	120*	91*	85*	88*	76			
334680009H01 (9)	Bronx	New York City	Center City	72*	70*	68*	64*	55*	48			
334680038H01 (38)	Bronx	New York City	Center City	96*	95*	94*	62*	65*	59			

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Monitoring Station Location				Annual Geometric Mean ug/m ³ (NAAQS = 75 ug/m ³)								Comments
PA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
334680031H01 (31)	Richmond	New York City		92*	98*	78*	78*	79*	72			
334680032H01 (32)	Richmond	New York City		101*	96*	84*	81*	81*	68			
334680033H01 (33)	Richmond	New York City	Suburban Industrial	110*	105*	84*	94*	84*	82			
334680034H01 (34)	Richmond	New York City		-	80*	60*	66*	63*	60			
334680035H01 (35)	Richmond	New York City		86*	90*	71*	74*	74*	64			
334680036H01 (36)	Richmond	New York City		72*	71*	59*	63*	61*	53			

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EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
332460001F01 (2901-01)	Nassau	Glen Cove	Center City - Commercial	111	86	68	?	63	54			
332300002F01 (2904-04)	Nassau	Freeport	Suburban - Residential	?	73	54	56	53	48			
332360001F01 (2905-01)	Nassau	Garden City	Suburban - Residential	60	68	52	55	50	44			
335800001F01 (2909-01)	Nassau	Rockville Centre	Suburban Residential	121	92	73	74	69	56			
333480001F01 (2944-01)	Nassau	Kings Point	Suburban Residential	75	66	43	45	42	T			
332900003F01 (2950-01)	Nassau	Hempstead	Suburban	95	83	57	60	61	54			

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Monitoring Station Location				Annual Geometric Mean ($\mu\text{g}/\text{m}^3$) (NAAQS = $75 \mu\text{g}/\text{m}^3$)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
332900001F01 (2950-03)	Nassau	Hempstead	Suburban - Residential	121	100	73	68	70	55			
332900005F01 (2950-10)	Nassau	Hempstead	Suburban - Residential	?	89	56	70	68	57			
332900004F01 (2950-11)	Nassau	Hempstead	Suburban - Commercial	95	73	57	59	54	49			
332900007F01 (2950-12)	Nassau	Hempstead	Center City - Industrial	-	-	80	73	74	60			
334520001F01 (2951-01)	Nassau	North Hempstead	Suburban - Residential	79	61	49	55	53	46			
(2951-02)	Nassau	North Hempstead		-	-	-	-	-	44			

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Monitoring Station Location				Annual Geometric Mean (ug/m ³) (NAAQS = 75 ug/m ³)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
335550001F01 (5149-03)	Suffolk	Port Jefferson	Suburban - Industrial	-	-	-	-	41	36			
335550002F01 (5149-04)	Suffolk	Port Jefferson	Suburban - Commercial	-	-	-	-	49	44			
330280001F01 (5150-01)	Suffolk	Babylon	Suburban - Industrial	62	63	52	55	59	54			
336580001F01 (5151-01)	Suffolk	Brookhaven	Suburban - Residential	62	74	57	53	48	39			
336580002F01 (5151-03)	Suffolk	Brookhaven	Suburban - Commercial	105	72	47	41	40	38			
336580011F01 (5154-02)	Suffolk	Islip	Suburban - Commercial	50	54	47	52	46	40			

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EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
336580023F01 (5157-04)	Suffolk	Smithtown	Suburban	52	43	47	48	48	44			
336340001F01 (5158-01)	Suffolk	Southampton	Suburban - Residential	36	35	34	43	35	27			
5157-01	Suffolk	Smithtown	Suburban	-	43							

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EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
337400001F01 (4322-01)	Rockland	West Haverstraw	Suburban - Commercial	-	-	?	47	49	48			
336560001F01 (4329-06)	Rockland	Suffern	Suburban - Residential	52	54	60	56	53	48			
335780001F01 (4340-01)	Rockland	Clarkstown	Suburban - Commercial	50	52	54	50	44	37			
335780002F01 (4352-01)	Rockland	Orangetown	Suburban - Commercial	-	-	?	54	52	46			

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Monitoring Station Location				Annual Geometric Mean (ug/m ³) (NAAQS = 75 ug/m ³)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
335360001F01 (5901-01)	Westchester	Peekskill	Center City - Commercial	67	73	74	66	76	60			
337480001F01 (5902-01)	Westchester	White Plains	Center City - Commercial	89	81	64	57	55	50			
334480003F01 (5903-04)	Westchester	Mount Vernon	Center City - Commercial	-	-	-	?	54	50			
334620002F01 (5904-02)	Westchester	New Rochelle	Suburban - Commercial	81	78	64	64	58	59			
335200001F01 (5905-01)	Westchester	Ossining	Center City - Commercial	59	50	49	44	59	46			
335520001F01 (5906-02)	Westchester	Port Chester	Center City - Commercial	72	67	53	51	57	42			

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Monitoring Station Location				Annual Geometric Mean ($\mu\text{g}/\text{m}^3$) (NAAQS = $75 \mu\text{g}/\text{m}^3$)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
337620001F01 (5907-08)	Westchester	Yonkers	?	88	99	72	?	60	68			
335910001F01 (5908-01)	Westchester	Rye	Center City - Commercial	74	72	64	58	59	64			
334100001F01 (5909-01)	Westchester	Mamaroneck (V)	?	70	63	57	51	50	48			
334880001F01 (5932-01)	Westchester	North Tarrytown	Center City -- Commercial	56	56	47	46	53	44			
337320006F01 (5953-01)	Westchester	Greenburgh	Suburban - Residential	83	83	67	59	61	55			
334100002F01 (5956-01)	Westchester	Mamaroneck (T)	Center City -	?	?	?	59	59	52			

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Pollutant: Total Suspended Particulates
 National Ambient Air Quality Standards

Monitoring Station Location				Annual Geometric Mean (ug/m ³) (NAAQS = 75 ug/m ³)								Comments
EPA ID # State ID #	County	Municipality	Site Description	1970	1971	1972	1973	1974	1975	1976	1977	
337320003F01 (5957-02)	Westchester	Mount Pleasant	Suburban - Residential	50	43	41	40	45	42			
337320005F01 (5966-02)	Westchester	Somers	Suburban - Residential	45	45	43	36	36	34			
337320004F01 (5968-02)	Westchester	Yorktown	Suburban - Residential	39	36	30	32	37	33			
334480001F01 (5903-01)	Westchester	Mount Vernon	Center City Commercial	72	74	?	T					
337620001A01/ P01	Westchester	Yonkers	Center City - Commercial	78	?	?	?	62 (?)	75 (?)			

? = failed to meet average criteria

T = station terminated

* 50th Percentile

Table 3

Air Quality Summary Report

AQCR: New Jersey-New York-Connecticut (New York Portion) (043)
Attainment Date: 1977

Pollutant: Total Suspended Particulates
(Annual)[illegible]

IV. Data Adequacy

The quality control of the data from TSP samplers operated by NYCDAR and NYSDEC has been adequate. The monitors are in generally good condition and receive regular maintenance and calibration. The stations operated by the NYSDEC are calibrated every 400 hours of operation. The NYCDAR stations are calibrated every six months. Until August 1975 a variac and a superior gas meter were used to calibrate a Dixon flow meter. This unacceptable method was replaced by a calibration orifice which is acceptable.

The monitors have consistently reported a sufficient amount of data so that statistically representative annual geometric means are available for stations. This has not occurred in the fourth quarter of 1975 where there was a reduction in number of samples obtained by the NYCDAR. However, this reduction does not appear significantly to affect the confidence of the annual means. In particular, the five monitoring sites exceeding primary standards had reported a sufficient amount of data throughout the year.

Many NYCDAR particulate hi-vols are located only 6 inches apart from special hi-vols (used for lead sampling). If the samplers are operating at the same time, the close proximity of samplers can cause air flow interferences and affect the values recorded at these sites. The hi-vols, however, are never operated at the same time as the special hi-vols so that the values recorded at these sites are not influenced by air flow interferences.

V. Impacting Sources and Controls

The control strategy selected by the State to reduce particulate emissions in the NJ-NY-Conn.AQCR is based upon enforcement of these regulations:

Part 212 - Processes and Exhaust and/or Ventilation Systems

Part 215 - Open Fires

Part 222 - Incinerators

Part 227 - Stationary Combustion Installations

A discussion of sources impacting on the sites not attaining the primary

standard for TSP is presented below. This discussion includes point and area sources.

A. P.S. 371, Brooklyn

Based on prevailing wind directions, the significant point sources impacting on the P.S. 371 monitoring station are the Hamilton Avenue municipal incinerator, American Can Company and the Bush Terminal. The location of these sources relative to the monitoring station is shown in Figure 11. Stack parameters and the identifying map symbol for each source are listed in Table 4.

1. Hamilton Avenue Incinerator

The Hamilton Avenue municipal incinerator is operated by the New York City Department of Sanitation. Its current particulate matter emissions are 1700 tons per year and the source is not in compliance with Part 222. The incinerator is presently on a State compliance schedule, but because of the New York City financial situation, work to install emission control equipment was halted and the source is expected to cease operation by July 1977.

2. American Can Company

The American Can Company ceased operations in March 1976. Prior to its closing its particulate matter emissions were 15 tons per year.

3. Bush Terminal

The Bush Terminal is an industrial park consisting of many operations including the receiving and shipping of goods. The NYCDAR considers all sources in the terminal to be in compliance with applicable particulate emissions regulations; however, uncontrolled particulate matter emissions are observed from sources of fugitive dust and motor vehicle activity in the terminal area.

4. Miscellaneous Sources

Numerous machine shop operations, pipe yards and welding companies exist to the immediate north, south and east of the monitoring station. A railroad yard 1 mile southwest of P.S. 371 also impacts on the monitoring site. In addition, the elevated Brooklyn-Queens Expressway (I-278) located 500 ft. west and Fourth Avenue,

Figure 11 Sources Impacting on the P.S. 371 Monitoring site.

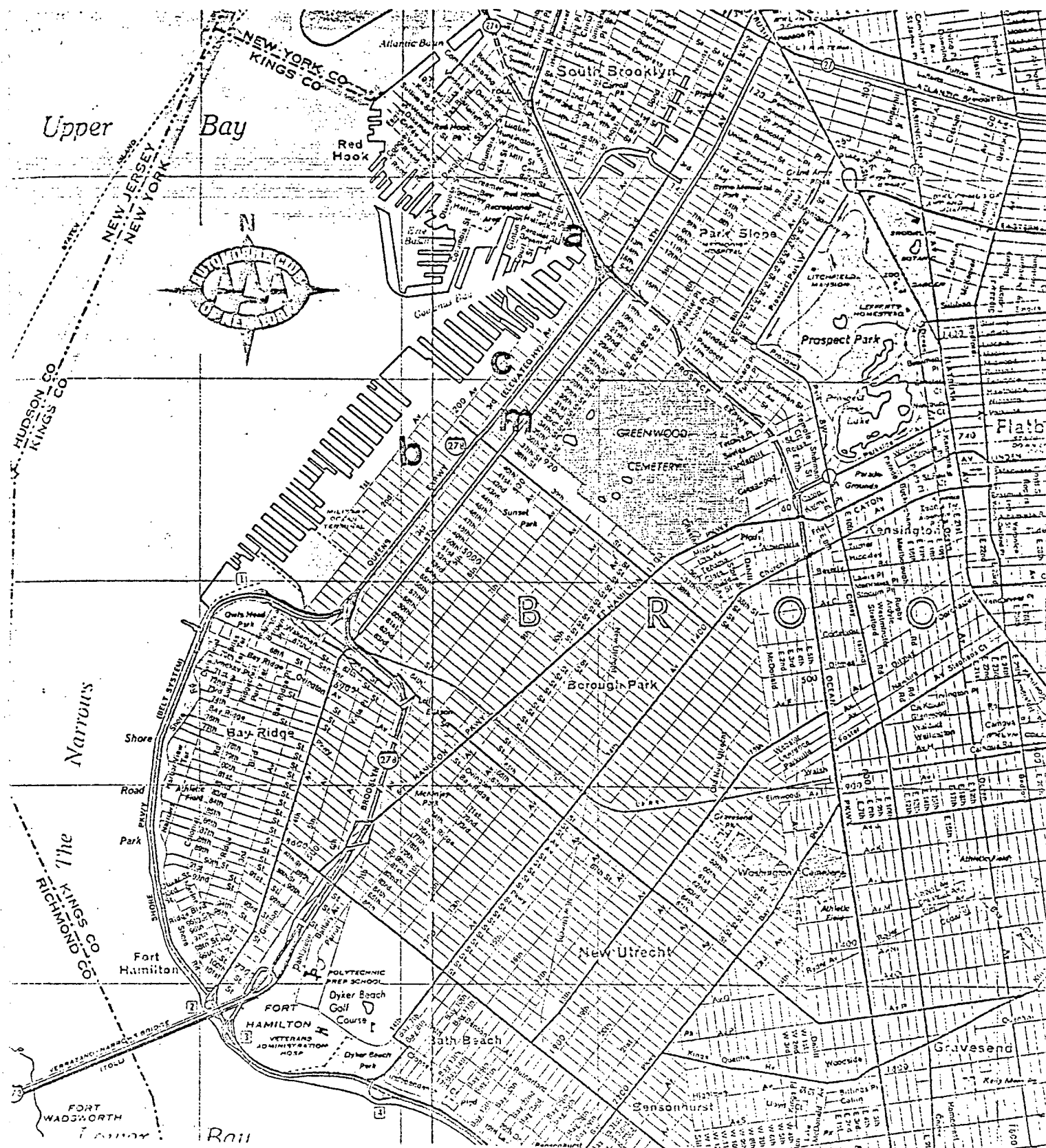


Table 4

Principle Point Sources Impacting on the
P.S. 371 Monitoring Site (m)

Source	Map Symbol	Address	Stack Data	Distance & Direction from (m)	Emissions (Tons/yr) 1975	Emissions (Tons/yr) 1977	% of Reduction 1975 to 1977
Bush Terminal Warehouses	c	Brooklyn, N.Y.	3 stacks 150 ft. each	0.5 mi NW	?	?	0
American Can Company	b	420 Kent Ave. Brooklyn, N.Y.	3 stacks 150 ft. each	0.75 mi SW	15	Will close March 1976	15
New York City Dept. of Sanitation	a	Hamilton Avenue and 16th Street Brooklyn, N.Y.	2 stacks 150 ft. each	0.75 mi NW	1700	Will close July 1977	1700
TOTAL					<u>></u> 1715	<u>></u> 0	1715

immediately adjacent to P.S. 371, are heavily travelled roadways impacting on the monitoring station.

B. Bowery Bay, Queens

The significant point sources impacting on the Bowery Bay Station are the Con Edison Astoria, Ravenswood and 74th Street Generating Stations and Steinway and Sons, Inc. In addition, construction work at the Bowery Bay Sewage Treatment Plant is a significant source of fugitive dust emissions. The monitoring station is located at the Sewage treatment Plant the locations of the point sources are shown in Figure 12, and stack parameters and identifying map symbols are listed in Table 5.

1. Con Edison Generating Stations

(Astoria, Ravenswood, 74th Street)

The current emissions from the Astoria, Ravenswood and 74th Street Stations are 1564, 1997 and 212 tons per year, respectively. All stations are in compliance with Part 227.

2. Steinway and Sons, Inc.

The current emissions from Steinway and Sons are unknown. The compliance status of this piano manufacturer is also unknown.

3. Bowery Bay Sewage Treatment Plant

The Bowery Bay STP has been under construction since 1973 and is a significant source of particulates. Major construction is expected to be completed in 1976.

4. Miscellaneous Sources

The Bowery Bay monitoring station is one-half mile west of LaGuardia Airport. To the immediate south of the station are numerous machine shop operations, pipe yards and welding companies. A fuel truck loading facility is located 500 ft. west of the station. The station is also near partially paved roadways which are a source of fugitive dust.

C. Samuel Gompers High School, Bronx

Figure 12

Sources Impacting on the NYDAR Laboratory Monitoring Site (m), the Bowery Bay Monitoring Site (m1), and the Samuel Gompers H.S. Monitoring Site (m2).

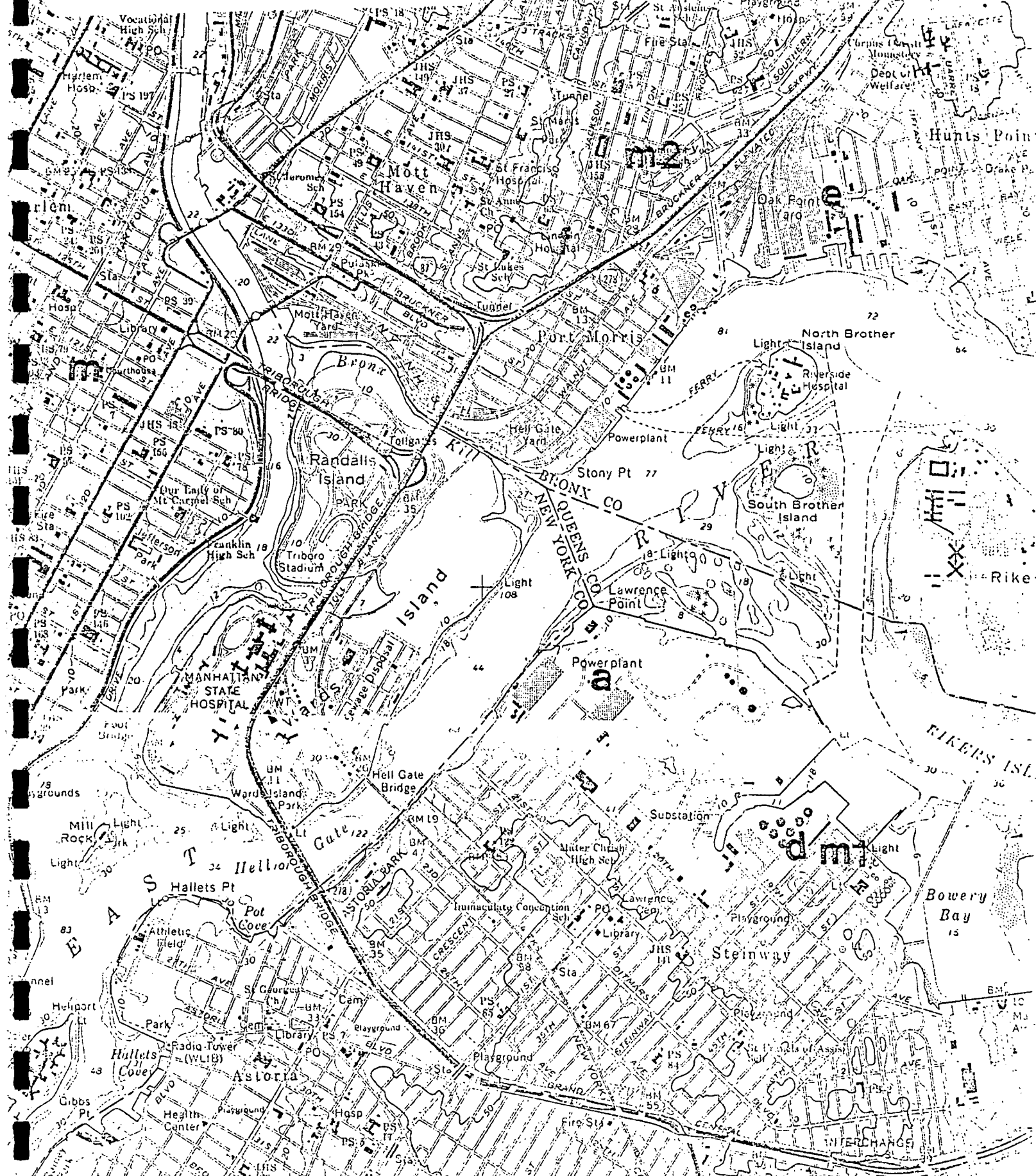


Table 5.
Principle Point Sources Impacting on the
Bowery Bay Monitoring Site (MI)

Source	Map Symbol	Address	Stack Data	Distance & Direction from (m)	Emissions (Tons/yr) 1975	Emissions (Tons/yr)	% Reduction
Con Edison Astoria Station	a	20th Avenue & 21 Street Queens, N.Y.	8 stacks 200 ft. each	1 mi. W	1564	1564	0
Con Edison Ravenswood Station	b	37th Avenue & Vernon Blvd. Queens, N.Y.	5 stacks 3 @ 500 ft. 2 @ 160 ft.	3 mi. SW	1997	1997	0
Steinway & Sons	d	Steinway Pl. Queens, N.Y.	1 stack 80 ft.	.4 mi. W	?	?	?
Con Edison 74 St. Station	c	74th St. & East River New York, N.Y.	1 stack 500 ft.	3 mi. SW	212	212	0
TOTAL					<u>></u> 3773	<u>></u> 3773	?

The significant point sources impacting on the Samuel Gompers High School monitoring station are the Con Edison Astoria Generating Station, the National Gypsum Bond Company and Lincoln Hospital. The locations of the point sources are shown in Figure 12 and stack parameters and identifying map symbols are listed in Table 6.

1. Con Edison Astoria Generating Station

The Astoria Station currently emits 1564 tons per year of particulates. The source is in compliance with Part 227.

2. National Gypsum Bond Company

The current particulate emissions of National Gypsum are 75 tons per year. The compliance status presently is unknown, but this source will be inspected in the near future in order to determine its compliance status.

3. Lincoln Hospital

The emissions and compliance status of the Lincoln Hospital fuel combustion installation are unknown.

4. Miscellaneous Sources

The Samuel Gompers High School monitoring station is surrounded by numerous apartment buildings having low-level residual oil-fired boilers and on-site incinerators. Based on the EPA studies, "Determination of Particulate Emissions Factors for Boilers and Incinerators", Contract No. 68-02-1070, many of these sources are out of compliance with applicable regulations.

Besides the apartment buildings, other sources include small industrial operations and nearby New York City Department of Sanitation facilities. The elevated Bruckner Expressway (I-278) 100 ft. east and Southern Boulevard immediately to the east are heavily travelled roadways which also impact on the site. In addition, building fires near the monitoring station impact on the site.

D. NYCDAR Laboratory, Manhattan

The site is located in one of the most densely populated portions of the AQCR. The significant sources impacting on the NYCDAR Lab monitoring station are

Table 6
Principle Point Sources Impacting on the
Samuel Gompers H.S. Monitoring Site (M2)

Source	Map Symbol	Address	Stack Data	Distance & Direction from (m)	Emissions (Tons/yr) 1975	Emissions (Tons/yr)	% Reduction
Con Edison Astoria Station	a	20th Avenue & 21 Street Queens, N.Y.	8 Stacks 200 ft. each	1.5 mi. SE	1564	1564	0
Lincoln Hospital	f	141 Street & Jackson A Avenue, Bronx	1 Stack 200 ft.	1 mi. S	?	?	?
National Gypsum Bond Company	e	Barry Avenue Bronx, N.Y.	2 Stack 200 ft. each	1.5 mi. E	75	?	?
Total					≥ 1639	≥ 1564	?

the numerous low-level apartment house residual oil-fired boilers and on-site incinerators which surround the station. Many of these sources are out of compliance. Other sources may be identified by a current Interstate Sanitation Commission study, "Control of Suspended Particulates", EPA Grant No. S802496. Another source are urban renewal projects located 0.1 to 0.3 miles northwest of the site, which also may be impacting on the monitoring station. The station is represented by a letter "m" in Figure 12.

E. Fresh Kills, Staten Island

The significant point sources impacting on the Fresh Kills monitoring station are the Con Edison Arthur Kill Generating Stations, FMC, Metro Containers/Kraft Co., American Metal Climax, Inc. - U.S. Metals, DuPont, Reichhold Chemical Company, Exxon Bayway Refinery and Chemical Company and American Cyanamid. In addition, a landfill operation surrounding the site is a major source of fugitive dust emission. The locations of the point sources are shown in Figure 13 and stack parameters and identifying map symbols are listed in Table 7.

1. Con Edison Arthur Kill Generating Station

The Arthur Kill Station currently emits 825 tons per year of particulates. The source burns residual oil and is in compliance with Part 227.

2. Public Service Gas & Electric Sewaren and Linden Generating Stations

The PSG&E Sewaren and Linden Stations emit 1150 and 1122 tons per year of particulates, respectively. They are in compliance with New Jersey's Subchapter 4 particulate matter emission regulations.

3. Miscellaneous Point Sources

The Ford Motor Company, Metro Containers, American Metal Climax, Reichhold Chemicals, Exxon, DuPont and American Cyanamid are in compliance with applicable New Jersey emission regulations. It should be noted that in addition to the 88 tons per year of particulates emitted from DuPont, an estimated 116 tons per year of sulfate mist are also emitted. The mist has the potential to form particulates.

4. Fresh Kills Landfill

The Fresh Kills Landfill site is a significant source of fugitive dust emissions. However, no estimate of its current or future emission rate is available.

VI. Evaluation of Control Strategy

A. P.S. 371, Brooklyn

The annual geometric mean concentration in 1975 of 77 ug/m^3 at the P.S. 371 site was the lowest in the last six years. Moreover, in 1975 the 24-hour primary standard was attained. Assuming a background concentration of 35 ug/m^3 , the reduction in controllable emissions from the 1975 concentration needed to attain the primary NAAQS of 75 ug/m^3 , the reduction in controllable emissions from the 1975 concentration needed to attain the primary NAAQS of 75 ug/m^3 is only $4\% \left(\frac{77-75}{77-35} \times 100 \right)$. Since, as shown in Table 7, significant emission reductions are expected for sources impacting on the station, it is likely that the standard will be achieved by 1978.

B. Bowery Bay, Queens

The annual geometric mean concentration in 1975 of 96 ug/m^3 at the Bowery Bay site reflects a general increase in concentrations since 1973, when construction at the sewage treatment plant began. The reduction in controllable emissions from the 1975 concentration needed to attain the primary standard $33\% \left(\frac{96-75}{96-35} \times 100 \right)$. Since, in 1973, the site was attaining the primary standard, before start of construction at the STP, it is strongly suspected that the construction is causing the current contravention of the standard and that the standard will again be achieved following the completion of construction.

C. Samuel Gompers High School, Bronx

The annual geometric mean concentration in 1975 of 76 ug/m^3 at the Samuel Gompers High School monitoring site is the lowest concentration since 1970. The reduction in controllable emissions from the 1975 concentration needed to attain the primary standard is only $2\% \left(\frac{76-75}{76-35} \times 100 \right)$. This reduction could be achieved by enforcement of apartment house boilers and incinerator regulations.

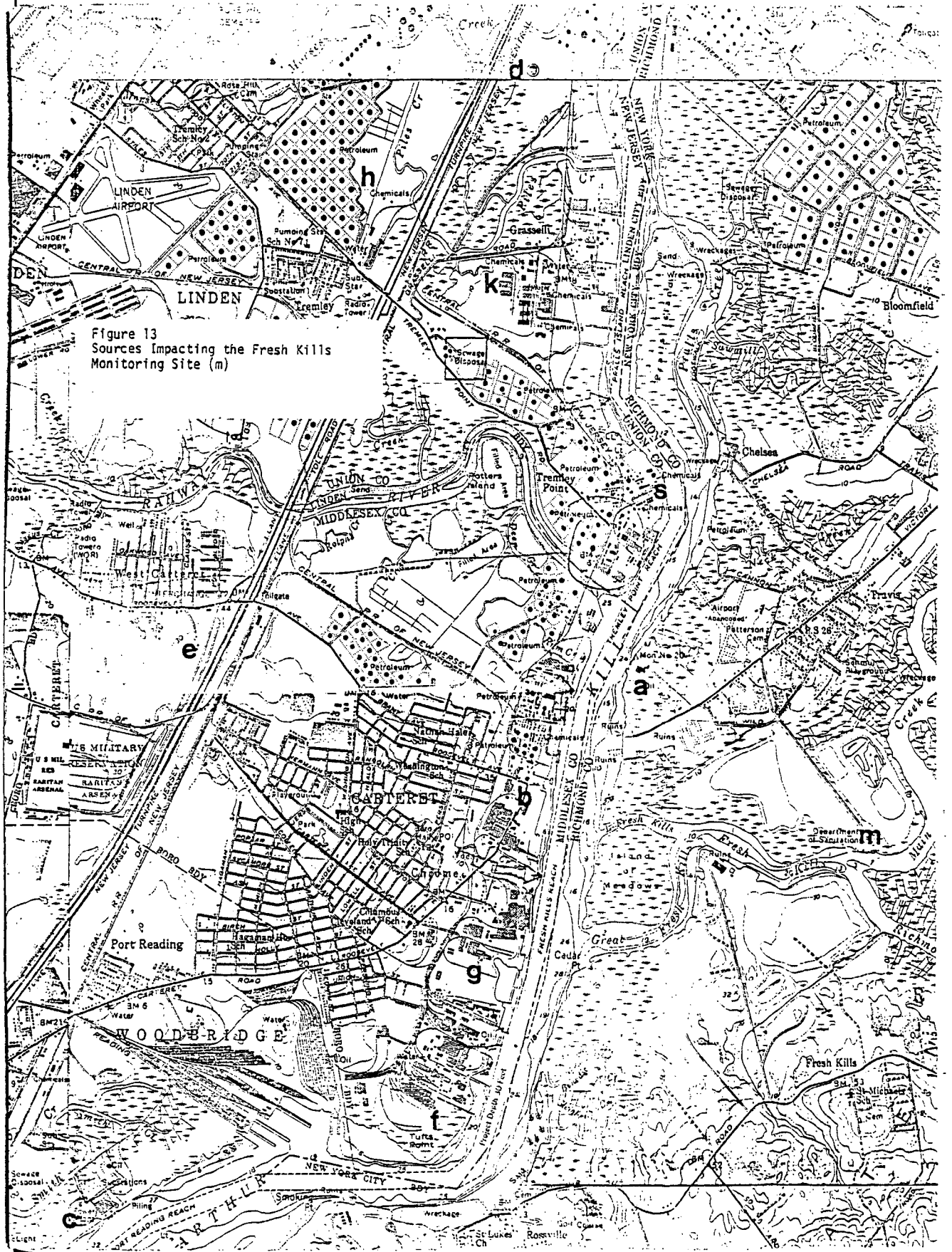


Table 7
 Principle Point Sources Impacting on the
 Fresh Kills Monitoring Site (m)

Source	Map Symbol	Address	Stack Data	Distance & Direction from (m)	Emissions (Tons/yr) 1975	Emissions (Tons/yr)	% Reduction
Con Edison, Arthur Kill Station	a	Victory Boulevard Staten Island	1 Stack 300 ft.	1.5 mi. NW	825	825	0
FMC	b	500 Roosevelt Avenue Carteret	?	1.4 mi. W	127	127	0
Public Service Gas & Electric Sewaren Station	c	Woodbridge	1 Stack 225 ft	4.0 mi. SW	1150	1150	0
Public Service Gas & Electric Linden Station	d	Wood Avenue Linden	4 Stacks	4.0 mi. NNW	1122	1122	0
American Cyanimid	s	Tremley Point Road Linden	Several stacks 40 - 110 ft		265	265	0

Table 7
(Continued)

Principle Point Sources Impacting on the
Fresh Kills Monitoring Site (m)

Source	Map Symbol	Address	Stack Data	Distance & Direction from (m)	Emissions (Tons/yr) 1975	Emissions (Tons/yr)	% Reduction
Metro Containers/ Kraft Company	e	Minue Street Carteret			144	?	?
American Metal Climax U.S. Metals	f	Carteret	?	3.0 mi. WNW	684 (c. 1970)	?	?
Reichhold Chemical	g	Middlesex Avenue Carteret	?	2.0 mi. WSW	74	?	?
Exxon Bayway Refining & Chemical Company	h	Linden	?	3.5 mi. NW	4000	3600	10
Du Pont Grasselli Plant	k	Linden	several stacks 40-130 ft.	3.0 mi. NW	88	88	0
Total					8479	≥ 7177	?

D. NYCDAR Laboratory, Manhattan

The annual geometric mean concentration in 1975 of 89 ug/m³ at the NYCDAR Lab site reflects a gradual reduction in TSP levels since 1970. The reduction in controllable emissions from the 1975 concentrations needed to attain the primary standard is 25% $\left(\frac{89 - 75}{89 - 35} \times 100 \right)$. A continued improvement in air quality is dependent on reduction in particulate matter emissions from apartment house boilers and incinerators. It is uncertain as to whether such a reduction can be expected without greater enforcement of emission regulations.

E. Fresh Kills, Staten Island

The annual geometric mean concentration in 1975 of 82 ug/m³ at the Fresh Kills site reflects a lack of significant change in TSP levels since 1971. The reduction in controllable emissions from the 1975 concentration needed to attain the primary standard is 15% $\left(\frac{82 - 75}{82 - 35} \times 100 \right)$. Since no significant reductions in emissions from point sources or from the Fresh Kills landfill are planned, it is not expected that the standard of 75 ug/m³ will be attained.

VII Conclusions

The total suspended particulate concentrations recorded in the New York portion of the New Jersey-New York-Connecticut AQCR demonstrate primary standard problems currently exist at five monitoring sites within the densely populated City of New York. At two of the five non-attaining sites the problem is related to fugitive dust emissions (sewage treatment plant construction and solid waste landfill) and at two other sites the problem is closely associated with low-level sources (apartment house boilers and incinerators. The fifth non-attaining site is affected by a multitude of source types including roadway emissions, light industry and municipal incineration of refuse.

TSP concentrations at the P.S. 371 site will probably attain the primary standard by 1978 as a result of emission reductions from impacting sources. The TSP levels at the Bowery Bay site will probably attain the primary standard as soon as construction activity at the sewage treatment plant is completed.

For the other three non-attaining monitoring sites, the problems are caused by deficiencies in the State Implementation Plan and failure to fully enforce existing regulations. The SIP inadequately controls fugitive dust emissions, and compliance with applicable regulations of apartment house boilers and incinerators is incomplete.

VIII. Recommendations

In order to assure attainment of the National Ambient Air Quality Standards for particulate matter in the New York portion of the New Jersey-New York-Connecticut AQCR, it is recommended that:

1. Greater enforcement of apartment house boiler and incinerator regulations be undertaken.
2. The results of the maintenance plan analysis be used to determine if attainment of the primary standard will be assured if all sources achieved full compliance with emission regulations. This analysis is expected to be completed by May 1977.
3. The effectiveness and enforcement of existing fugitive dust emission regulations for New York City be reviewed.
4. Development of the Air Quality Maintenance Plans be continued through a study to verify and update the emission inventory and projections for the AQCR. This work will be done under contract and should determine the likelihood of achievement of the secondary TSP standard and assure its maintenance.
5. The results of the current Interstate Sanitation Commission project, "Control of Suspended Particulates," EPA Grant No. S802496, be used to identify sources of particulates in the AQCR and develop new control strategies. The project's final report is expected to be available by September 1976.