REGIONAL ADMINISTRATOR'S ANNUAL REPORT

Environmental Quality In New England

August 1977

U.S. Environmental Protection Agency

New England Regional Office, Boston, Mass.

REGIONAL ADMINISTRATOR'S

ANNUAL REPORT

ENVIRONMENTAL QUALITY

IN NEW ENGLAND

AUGUST 1977

From the Regional Administrator:

This is the Environmental Protection Agency's third Annual Report on Environmental Quality in New England. Like its predecessors, it covers air and water quality, drinking water, solid waste management, and toxic substances in the six New England states -- Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. This year's report also contains a new section on pesticides.

The past year has seen the passage of two important pieces of environmental legislation -- the Resource Conservation and Recovery Act and the Toxic Substances Control Act. These laws have given EPA and the states wide new powers and significant new responsibilities for protecting the environment and the public health. In addition, this year has marked the important July 1, 1977 deadline for industries and municipalities to have applied necessary treatment for wastewater discharges.

Although these are all significant milestones, it is well to remember that passing new laws and meeting established deadlines alone do not necessarily signal actual improvement in the environment. Documenting improvements -- and failures to improve -- in environmental quality is the purpose of this report. It is intended to show whether the air you breathe is actually healthful, whether rivers and lakes are actually more fit for recreation, whether your drinking water is actually safe.

Generally, this year has seen continuing improvement in the quality of the New England environment. Although this improvement is gratifying, we will continue enforcement action against polluters until we have achieved the highest quality environment possible consistent with economic growth and energy needs.

The environmental area that continues to concern me the most is our inability to make a significant dent in the oxidant problem. Both the level and frequency of photochemical oxidant violations have increased over the last year, despite state and federal strategies designed to reduce oxidant levels. It appears that, for the short term, only changes in the design of the internal combustion engine will allow us to reduce oxidant levels in this region to the point necessary to protect the public health and welfare.

I hope that this report will be used as a resource by all those who care about New England and her environment. I would also like to take this opportunity to say that I appreciate your concern for and interest in the environment, and that I look forward to working with you to bring about a cleaner and more satisfying environment for all New Englanders.

William R Adams Jr

William. R. Adams, Jr.

TABLE OF CONTENTS

AIR QUALITY

The Federal Clean Air Act requires the Administrator of the Environmental Protection Agency to set ambient air quality standards designed to protect the public health (primary standards) and the public welfare (secondary standards). Once such standards have been established, the states are required by law to develop State Implementation Plans (SIP's) or regulatory programs to provide for the attainment and maintenance of these standards. The EPA has established ambient air quality standards for five pollutants; sulfur dioxide, total suspended particulates, carbon monoxide, photochemical oxidants (smog), and nitrogen oxides. These standards establish levels which may not be violated more than once a year. (It should be noted that it is possible to have a single exceedance, i.e., one reading above the standard, but if the second highest value does not exceed the standard, no violation is considered to have occurred.) The primary public health standards are necessary because of the proven linkage between air pollution and a number of respiratory illnesses such as chronic bronchitis, emphysema, and lung cancer. High levels of air pollution also increase the discomfort of individuals suffering from allergies and contribute to increases in respiratory illnesses such as pneumonia and bronchial asthma. On a national level, air pollution is estimated to result annually in 15,000 excess deaths, 15 million days of restricted activity, and seven million sick days.

On July 1, 1976, the Regional Administrator formally designated portions of New England as nonattainment for certain standards and called for the states to undertake studies to determine the causes of the violations and to adopt the necessary programs, including revisions to SIP's, needed to ensure attainment of standards.

Sulfur Dioxide - The principal source of sulfur dioxide (SO_2) is combustion of fossil fuels containing sulfur. In New England, sources of SO_2 emissions include power generating stations, industrial boilers, and residential and commercial heating. Figure 1 shows the July 1 nonattainment designation for SO_2 in New England. There has been no general change in SO_2 readings at selected sites in New England during the period 1974-76. Since SO_2 emissions are controlled by limiting sulfur in fuel and the limitation has not been changed, the variations are probably due to meteorological conditions. No violation of the 24 hour primary standard was recorded in 1976, although one exceedance (a single reading above the standard) was recorded at a monitoring site in Madawaska, Maine. The state of Maine has been asked to examine the cause of this exceedance.

Total Suspended Particulates - Figure 2 shows that large portions of New England have been designated nonattainment due to violations of the primary or secondary standard for total suspended particulates. During calendar year 1976 five monitoring stations recorded violations of the 24 hour primary standard for TSP. These sites are located in Springfield and Worcester (2), Massachusetts, Berlin, New Hampshire, and Rutland, Vermont. Violations of the 24 hour secondary standard occurred at 29 sites and in every state. The highest 24 hour levels of particulates recorded were in Worcester, Massachusetts, Meriden, Connecticut, and Berlin, New Hampshire. Table 2 shows the 3 year trend 1974-76 for particulate levels at selected monitoring sites in New England. In general, the state average for the 3 years has not shown any significant change. Particulate matter can come from a variety of sources including fossil fuel burning, industrial processes, fugitive dust, such as wind blown materials from unpaved roads, sand and coal piles, and reentrainment of road dust caused by automobile traffic. Studies are now underway throughout New England to determine the cause of observed violations.

Photochemical Oxidants - Photochemical oxidants, or smog, are formed by a chemical reaction in the presence of sunlight of hydrocarbons and nitrogen oxides, both of which result from combustion, industrial processes, and gasoline handling. Throughout New England, automotive emissions produce approximately 50 percent of the hydrocarbons in our air. The remaining 50 percent are emitted by stationary sources, such as dry cleaning and degreasing operations, fabric and paper coating, printing and painting, gasoline storage and distribution, fuel combustion, and incineration. Figure 3 shows the nonattainment status for photochemical oxidants in New England. Only one Air Quality Control Region (AQCR), northern New Hampshire, demonstrated attainment of this standard based upon a monitor located in Berlin, New Hampshire. The primary health standard, which is 160 micrograms per cubic meter (160 ug/m^3), was violated at every other monitor site in New England, with levels in excess of three times the standard found in Connecticut. Highest levels in each state were recorded at Derby (568 ug/m^3), New Haven (537), and Middletown, Connecticut (519); Medfield, Massachusetts (447); West Greenwich, Rhode Island (402); Portland, Maine (340); Manchester, New Hampshire (294); and Burlington, Vermont (196). Table 3 shows the levels recorded at selected sites in New England and the frequency of violations for the period 1974-76. Of equal concern with the level of violation is the frequency with which they occur. Table 3 shows that frequency of violation at these sites increased in 1976 over 1975, generally by a wide margin. There were, for example, 563 violations at Groton State Park, Connecticut, 384 at Fairhaven, Massachusetts, and 336 in West Greenwich, Rhode Island. Photochemical oxidants continue to be the major air pollution problem in New England.

Carbon monoxide - Virtually all of the carbon monoxide found in New England results from motor vehicle emissions. Carbon monoxide (CO) is a localized problem, occurring primarily in urbanized areas subject to traffic congestion. In such areas, CO peaks coincide with daily traffic peaks and the highest levels are observed close to major highways and heavily travelled streets and intersections. Figure 4 shows the attainment/

nonattainment status for this pollutant in New England. Of the 13 state portions of AQCR's where CO levels are monitored, only two have not shown violations -- the Berkshire AQCR in Massachusetts and the Eastern Connecticut Intrastate. Table 4 shows the 1974-76 trend in CO 8 hour standard violations and maximum levels at selected sites in New England. Maximum observed levels in 1976 were significantly less at the selected sites in Connecticut, Maine, and New Hampshire when compared with 1974 and 1975 levels. Maximum levels increased or remained the same at the selected sites in other states. There appears to be no discernable trend in terms of the frequency of violations. In contrast with 1975, however, in 1976 there were no violations of the one hour primary standard for CO.

Nitrogen Oxides - Nitrogen oxides result from fuel combustion and motor vehicle emissions. Figure 5 indicates there has been no formal designation of nonattainment areas for NO_2 in New England due to a lack of adequate data. Violations have been reported in previous years in the Metropolitan Boston and Pioneer Valley Air Quality Control Regions in Massachusetts. During 1976, the only observed violation of the primary standard was recorded in Springfield, Massachusetts, with an annual average of 109 ug/m^3, compared with the standard of 100. Formal designation of nonattainment in these two areas is pending evaluation of these data to determine their validity. There are insufficient monitored data available for NO_2 to describe any long term trend.

The Dirtiest Air - An analysis of the air quality shows that the highest levels observed, including monitor sites with only a partial year record, were:

Particulates (24 hour) - Worcester, Massachusetts (458 ug/m^3)
(standard = 260 ug/m^3)
SO_2 (24 hour) - Milford, Connecticut (277 ug/m^3)
(standard = 365 ug/m^3)
CO (8 hour) - Springfield, Massachusetts (24.9 mg/m^3)
(standard = 10 mg/m^3)
Oxidants (1 hour) - Derby, Connecticut (568 ug/m^3)
(standard = 160 ug/m^3)

The Cleanest Air - Specifying the location of the cleanest air in New England depends upon which pollutant is being measured. The following is a list of the lowest levels for each pollutant recorded at a state operated monitoring site.

The lowest particulate levels were found at Caledonia County (Burke Mountain) and Orange County (Vermont Tech), Vermont. Both recorded levels of 65 ug/m^3.

The lowest sulfur oxide levels were found at Fairhaven, Massachusetts, while the lowest oxidant levels were measured at Berlin, New Hampshire. The lowest level of carbon monoxide, 8.2 mg/m^3, was found at the Merrimack Street monitor in Manchester, New Hampshire.

SURFACE WATER QUALITY

One of the major goals of the Federal Water Pollution Control Act is to restore the nation's waterways to a fishable-swimmable condition by July 1, 1983. Toward that end each state was required to develop water quality standards as interim goals to be achieved by July, 1977. Generally, the standards for New England rivers, lakes, and coastal areas provide for fishable-swimmable waters, except in heavily urbanized or industrialized areas.

State water quality standards vary according to the category of use for the surface waters involved. Class "A" waters are suitable for water supply without further treatment except simple disinfection. Class "B" waters are suitable for swimming and fishing, and Class "C" waters can be used for fishing, but not swimming. By these definitions, only Class "A" and Class "B" waters would meet the national goal described in the first paragraph.

In addition to use categories, water quality standards specify criteria which must be met to ensure that uses are maintained. Numerical or narrative criteria for Class "B" waters, the minimum classification which will meet the 1983 goal, include bacteria (coliform) limits to protect the health of swimmers, dissolved oxygen levels high enough to ensure the protection and propagation of fish and wildlife, and prohibitions on the presence of toxic substances. In addition, Class "B" waters must be low in turbidity, and free from excessive algae.

Although the major thrust of water pollution control efforts nationwide has been to restore polluted streams to fishable-swimmable status, a crucial element of an effective water quality management system for New England is the preservation of those waters which are currently of good quality. New England has an abundance of priceless clean lakes and streams whose quality must be protected and preserved to maintain their value. A major part of our future activities must be directed towards preserving these resources.

Current Water Quality Conditions

As of January 1977, 3,309 of the total 6,543 miles of the major river mainstems and tributaries assessed in New England are suitable for fishing and swimming. This means that 51 percent of the region's major stream miles are now meeting the 1983 goal of the Federal Water Pollution Control Act. This represents a 3 percent improvement in stream water quality during calendar year 1976. It should be noted that several states have recently improved their assessment procedures and the figures in this report cannot, therefore, be directly compared with statistics

contained in the last two annual reports. Tables 5 and 6 contain the most accurate figures and will be used as a basis for future comparisons.

It should also be noted that only the major river mainstems and tributaries are assessed in this report. Most of New England's thousands of miles of smaller upland tributaries are meeting the fishable-swimmable standard. For example, Connecticut reports that 93 percent of its total stream miles are now meeting or exceeding the Class B standard, while only 51 percent of the major streams are meeting those standards. Vermont reports 92 percent for total miles versus 62 percent for major stream miles.

Although 51 percent of the region's stream miles meet "B" standards, 61 percent of the assessed mileage now meets interim state water quality standards. Coliform bacteria levels and dissolved oxygen criteria are the most frequently violated water quality parameters. Major municipal and industrial discharges with inadequate levels of treatment have historically been responsible for these violations.

Coliform violations occurred in most of the major rivers assessed. Although raw or inadequately treated municipal discharge, urban runoff, and combined sewage overflows are the main causes of excessive coliform concentrations, non-point source runoff from silvacultural and agricultural practices are also implicated in coliform violations in rural areas.

These point source pollution problems are being addressed by two of the major elements of the Federal Water Pollution Control Act -- the construction grants program and the National Pollutant Discharge Elimination System permit program.

Hundreds of millions of dollars worth of municipal wastewater treatment facilities are just becoming operational or are under construction. All of the major industrial dischargers in the region have been issued enforceable "clean-up" permits. Although several major rivers will continue to show the effects of pollutant discharges until all treatment plants are operational and the dischargers have attained effluent limitations prescribed by their permits, many other streams are starting to demonstrate considerable improvement as a result of these actions. As more municipal and industrial discharges are controlled through these programs, we expect to see an acceleration of water quality improvements.

For example, large industrial treatment systems have recently become operational on the Housatonic, Nashua, and Blackstone Rivers in Massachusetts; the Androscoggin River in New Hampshire and Maine; and the St. Croix and Presumpscot Rivers in Maine. While sampling data cannot quantify the improvement yet, we do expect to see a significant change in water quality in these areas.

As point sources of pollution (municipal and industrial dischargers) come under control through the construction grants and permit programs, non-point sources such as urban and agricultural runoff will have an increasing impact on water quality. Section 208 of the Federal Water Pollution Control Act authorizes the EPA to administer an areawide waste treatment management planning program. The so-called "208" planning programs are designed to control complex water quality problems including urban runoff, agricultural and silvicultural runoff, septage management and lake eutrophication, as well as municipal and industrial discharges. To date, more than $14.6 million in 208 grants have been awarded to 17 areawide planning agencies and to the six New England states to prepare 208 plans. Although most of these planning programs will be coming to completion during 1977, some of the programs' interim achievements have already resulted in improvements in water quality.

A summary of water quality conditions in the six New England states is shown in Table 6. The data come from reports filed with EPA by the individual states.

The following is a brief summary of major problems and recent progress in each of the New England states.

Connecticut

Fifty-one percent of the major stream miles in Connecticut are meeting fishable-swimmable standards. This represents an eight percent improvement in the water quality of the state's major streams, which is the highest percentage increase over last year's figures of any state in the region.

Water quality improvements were reported in the Naugatuck and Willimantic Rivers as a result of municipal and industrial cleanups. Connecticut's biological sampling program indicates that for the first time in several decades, the Naugatuck River is clean enough to support natural populations of fish and aquatic life. The Willimantic River is once again being stocked with trout after a 10-year period during which the river was too polluted to support any fish life. Also, fishing conditions in the Connecticut River have improved, and hopefully salmon will again be running in that waterway.

Improvements are also evident in the Pawcatuck and Yantic Rivers. The entire mileage of both rivers, below standard. last year, is reported to meet the fishable-swimmable standard this year.

Major water pollution problems are still occurring in the Quinnipiac, Hokanum, Pequabuck, and Still Rivers, due mainly to industrial and municipal discharges and urban runoff. Combined sewer overflows cause severe pollution problems in the Connecticut River downstream of Hartford, the Thames River downstream of Norwich, and in coastal waters around the major urban centers of New Haven and Bridgeport.

Although coliform violations are still reported on all major streams assessed, dissolved oxygen levels have been steadily improving. Seventy-three percent of the stations analyzed this year indicated a significant improvement in dissolved oxygen. In fact, 73 percent of the tests covering eight water quality parameters analyzed at 15 stations demonstrated significant improvement.

Maine

A total of 1,930 miles of major waterways were assessed in Maine and of those, 1,204 or 62 percent were found to be fishable-swimmable. This represents a 2 percent improvement in water quality.

It should be noted that 91 percent of the major miles assessed are now meeting state standards. This is the highest percentage of any state in the region. It is also projected that 93 percent of the river miles will be fishable-swimmable by 1983.

The recent completion of several municipal and industrial treatment plants should result in significant improvements in the Androscoggin River near the New Hampshire border and in the St. Croix and Presumpscot Rivers. The lower sections of the Androscoggin River and Annabessacook Lake have both shown evidence of improved water quality. Dissolved oxygen levels in the Androscoggin have improved considerably as a result of industrial and municipal pollution cleanup programs. The elimination of several municipal discharges into Annabessacook Lake has significantly reduced algal bloom problems and preserved the recreational potential of this lake. The state also reports that a number of clam flats that had been closed because of pollution have been opened as a result of controlling municipal discharges.

Industrial discharges still adversely affect the Kennebec River, and both the Kennebec and St. John Rivers have serious non-point source pollution problems.

Massachusetts

In Massachusetts, only 28 percent of the major stream miles are meeting the fishable-swimmable standard. This is the lowest percentage in the region. However, the state has shown a four percent improvement over last year's figures. It should be noted that because of an improved assessment methodology and consideration of additional stream miles, this year's assessment cannot be directly compared with last year's.

A total of 1,474 miles were assessed in the state. Of that total, 410 miles were shown to meet the fishable-swimmable standard. The state projects that by 1983, 1,102 miles or 75 percent of the total will be suitable for fishing and swimming.

The only major waterway in the state listed as being totally fishable-swimmable is the 18 mile Farmington River.

Several large municipal treatment plants have gone on line recently and should result in noticeable improvements to the Nashua River (Fitchburg), the Blackstone River (Worcester), the Merrimack River (Greater Lawrence and Haverhill) and the Housatonic River (Pittsfield).

The elimination of raw discharges and the control of non-point sources have been credited with improving the quality of Lake Quinsigamond in Worcester and preserving the area's recreational benefits. Completion of municipal and industrial treatment facilities on the Deerfield River have resulted in attainment of standards in a good portion of that waterway.

Most urban rivers, however, including the Charles, Connecticut, Blackstone, and Merrimack, report major coliform problems. Portions of the Merrimack and Connecticut still receive untreated waste from large municipalities. Combined sewer overflows severely degrade water quality in the Charles, Connecticut, Merrimack, Nashua, and Blackstone Rivers and particularly in Boston Harbor. These problems are being addressed and we do expect to see improvements in the next few years.

New Hampshire

Forty-six percent or 591 of the 1,298 major stream miles assessed in New Hampshire are suitable for fishing and swimming. Based on the state's new assessment procedures, this represents an overall 3 percent improvement in the water quality over last year. By 1983, it is projected that 96 percent of the major river miles will meet the fishable-swimmable standard. This will give the state the highest percentage of major waterways meeting that standard in the region.

Improved water quality conditions were reported in the Pemigewasset and Contoocook Rivers. The Pemigewasset, by the mid-sixties, had deteriorated so much that it was fit only to transport sewage and for industrial use. As a result of controls on municipal and industrial wastewater, over 55 miles have been reclaimed. Nuisance conditions including obnoxious fumes, odors, and color have been eliminated and conditions suitable for canoeing, fishing, swimming, and aesthetic enjoyment have been restored. Trout have now returned to the Pemigewasset. The construction of municipal treatment facilities and industrial pollution abatement facilities, particularly by paper mills, has resulted in similar improvements in the Contoocook.

In the Merrimack River, untreated wastes from municipal and industrial sources and combined sewer overflows seriously deplete oxygen levels and contribute to violations in coliform criteria. Slightly more than 50 percent of this river meets the fishable-swimmable standard. However, by 1983 that percentage will rise to more than 90 percent. The more rural Connecticut, Androscoggin, and Upper Ammonoosuc Rivers, which have had severely depleted dissolved oxygen levels as a result of discharges from major paper mills in Groveton and Berlin, should demonstrate dramatic improvements this year resulting from recently completed industrial treatment plants.

Rhode Island

Rhode Island reported 64 percent of its major stream miles are fishable-swimmable. This is the same percentage that met that standard last year. A total of 211 miles of 329 assessed were classified as meeting the standard. The state therefore has the highest percentage of fishable-swimmable water in New England. In addition, 92 percent of the 117,764 acres of Narragansett Bay were listed as suitable for bathing.

The entire length of the Moosup River is suitable for swimming, while improvments in the Pawtuxet River were recorded as a result of industrial pollution cleanup.

Although municipal and industrial discharges now contribute to coliform and dissolved oxygen problems in the Pawtuxet and Pawcatuck Rivers, construction projects that will upgrade treatment levels are nearing completion and should result in significant improvement. Similar problems, along with combined sewer overflows and urban runoff have serious adverse effects on water quality in the Providence area and the Blackstone River. Another major problem that is now beginning to be addressed is conditions at the Providence municipal treatment plant. Equipment failures and overloading have resulted in conditions that necessitated closing sections of Narragansett Bay to shellfishing from time to time.

Vermont

In Vermont, 62 percent of the major stream miles are now suitable for fishing and swimming. A total of 686 miles of 1,103 major river miles are fishable-swimmable or better. If all of the stream miles in the state including upland streams were assessed, 92 percent would be suitable for fishing and swimming. By 1983, 82 percent of the major river mileage is projected to meet the fishable-swimmable standard.

There have been several water clean up successes in Vermont. One example is the elimination of granite and gravel wastes in the Steven's Branch of the Winooski River. The restoration and preservation of the West River in southern Vermont is another example of state and local efforts to protect Vermont's waterways. By controlling a major direct discharge from a resort area, the waterway was preserved as a major recreational resource.

Lakes

Lakes are one of the region's greatest aesthetic, recreational, and economic assets. They contribute enormously to the quality of life for New Englanders and provide diverse recreational opportunities for residents and tourists.

Therefore it is essential that we work to preserve, protect, and enchance these valuable water resources. Lake ecology is very fragile, much more than river ecology, because the water volume and rate of removal are relatively low. Thus, lakes do not have the self-cleansing capabilities of rivers which are constantly restored as they flow to the seas.

In New England, one of the major environmental problems affecting lakes is eutrophication, or advanced aging. Pollutants, including nutrients and sediments, can cause an excessive growth of algae or aquatic weeds in lakes. Excessive plant growth can lead to a reduction in the lake's ability to support a balanced population of aquatic life. Of primary concern are nutrients such as phosphorus and nitrogen compounds, sources of which include stormwater runoff and drainage from fields and farms.

State water pollution control agencies estimate that many significant lakes in their states are showing signs of eutrophication. For example, a study carried out several years ago indicated that 20 percent of the significant lakes in Massachusetts were showing signs of eutrophication, while 24 percent of the Connecticut lakes were suffering from the same problem.

In 1975 a Clean Lakes Program was initiated under Section 314 of the Federal Water Pollution Control Act. This section provides for federal participation in lake rehabilitation and preservation programs. This program provides the first opportunity for EPA to emphasize the need to place priority on restoring one of our region's most vital resources — our lakes. EPA has supported lake restoration projects at Morses Pond, Wellesley, Massachusetts; Lake Cochituate, Natick, Massachusetts; Ellis Brett Pond, Brockton, Massachusetts; Little Pond, Damariscotta, Maine; the Charles River Basin in Boston, Massachusetts; Lower Mystic Lake, Medford, Massachusetts; Annabessacook Lake, Winthrop, Maine; and Lake Bomoseen, Castleton, Vermont.

DRINKING WATER

On June 24, 1977, the Interim Primary Drinking Water Regulations became law. These regulations apply to all public water supplies with more than 15 service connections or which regularly serve more than 25 individuals.

The 3,215 water supplies in New England covered by these regulations are located as follows:

Connecticut	1,079	New Hampshire	707
Massachusetts	572	Rhode Island	122
Maine	399	Vermont	336

The intent of the law is for states to have primary enforcement authority as soon as they can demonstrate their ability to enforce standards at least as stringent as the federal standards.

Connecticut was the second state in the United States to be awarded primacy under the Safe Drinking Water Act, and four other New England states are expected to obtain this authority by September 30, 1977. Vermont, which received the first EPA program support grant in the country, will not be able to obtain this authority until the legislature reconvenes in 1978 and passes the necessary legislation.

Some progress has been made in dealing with water supply problems discussed in previous annual reports.

Microbiological Quality - Forty-five interstate carrier water supplies have continued under surveillance, but there has been no indication of improved microbiological quality. Haverhill continues to be "Use Prohibited" for poor microbiological quality but has taken steps to have a filtration plant designed and built. Boothbay Harbor, Maine, was also placed on the "Use Prohibited" list for poor microbiological quality. The number of "Provisionally Approved" water supplies has dropped from eleven to ten since last year's report. Of these ten, seven were "Provisionally Approved" because of monitoring deficiencies in the past and will be classified "Approved" once the monitoring requirements are consistently met. The remaining two water supplies were classified "Provisionally Approved" because of facility deficiencies which are now being corrected.

An indication that bacteriological quality is not as good as last year's is Vermont's record as follows.

	May 1975	May 1976	May 1977
No. of Supplies Under Surveillance	371	378	425
No. of Supplies Taking Required No. of Samples	-	216	194
No. of Supplies Meeting Bacteriological Standards	200	185	151
No. of Permanent Boil Water Orders	12	12	18
No. of Temporary Boil Water Orders	14	4	31

In early April, 1977, cases of giardiasis began to be diagnosed in Berlin, New Hampshire and by May 20 there were 205 confirmed cases. Berlin uses two rivers for its water supply -- the Ammonoosuc and the Androscoggin. Giardia cysts were identified in the raw and finished water of both water supplies, and in a beaver living in the Godfrey reservoir on the Ammonoosuc River. Improvements at the two filtration plants were made and further studies on disinfection to inactivate giardia cysts and to determine filtration effectiveness in removing the cysts are being carried out.

Lead - The problem of lead in drinking water in New England derives from a combination of two basic factors. First, the nature of the water supplies in New England is such that they are quite acidic and are very low in naturally occurring substances such as calcium and magnesium. Many of our supplies are so low in these constituents that they approach distilled water in purity. Because of a high degree of purity, this type of water tends to be very corrosive. In other words, it has the ability to dissolve material with which it may come in contact.

The second basic factor is the widespread use of lead pipe for conveying water to homes. Lead pipes have been in use since the nineteenth century and have produced the long standing problem with which we are faced today. The corrosive water dissolves lead from lead pipes as the water passes through the pipe, producing in many instances lead levels in drinking water which are several times in excess of EPA's standard of 0.05 milligrams per liter.

The Metropolitan District Commission (MDC) which supplies water to the Boston Metropolitan area has been attempting to correct the problem of lead for several years. In June of 1976, the MDC instituted a program of adding zinc orthophosphate, a commercial corrosion inhibitor. Continued monitoring by EPA showed that after six months of treatment, high lead levels persisted in drinking water. In December 1976, EPA advised the MDC that additional treatment was necessary and that caustic should be used. The MDC is now adding caustic to the water to raise the

pH in order to reduce the acidity of the water. Preliminary results indicate that pH adjustment is reducing lead levels.

While waiting for the MDC to institute a program, EPA continued sampling efforts by going to other communities that were known to have lead pipes and corrosive water. We also selected communities that utilized a variety of treatment techniques that might be useful in pointing to a solution to Boston's problem. Thus far we have conducted extensive sampling in more than fifteen communities and found ten of these to have lead in water at some homes in excess of EPA's standard.

Another area of interest is the Bennington, Vermont lead problem. After a Vermont state survey had revealed excessive water lead levels, a private individual in the town petitioned the Administrator of EPA to take action under the emergency powers section of the Safe Drinking Water Act. Our Water Supply Branch conducted extensive sampling in the town, confirming the very high lead levels. Because the town and the state have both acted expeditiously to alert citizens to the problem and to institute treatment to reduce the corrosivity of the water, the Administrator recognized that an imminent health hazard existed but declined to take action at that time.

Bennington began adding caustic and sodium bicarbonate in June, 1977 to its water. EPA will continue to monitor the water quality to determine the effectiveness of this treatment and method.

Chlorides and Sodium - Chlorides in drinking water pose a significant problem for residents of New England. During the late 1950's and early 1960's, the average concentration of chlorides in drinking water began to rise. Although the levels were generally well below the 250 parts per million guideline used by most states, the trend was not encouraging. However, in recent years the rise has begun to level off. This leveling off may be attributed in part to much more judicious use and storage of road salt, which is the main source of chlorides to New England water supplies. EPA is currently investigating alternative technologies for roadway snow and ice control.

Sodium is the other major component of road salt. Even when chloride levels fall below the public health standard, the levels of sodium associated with the chlorides may be hazardous to the increasing number of people on sodium-restricted diets. Also, many physicians believe that the restriction of sodium intake may be of general physiological benefit, so sodium levels in drinking water may be of concern to the general public and not just to those people on sodium-restricted diets.

The National Academy of Sciences' report of December 1976 to Congress considered sodium. The concluding two paragraphs are presented here.

"A large proportion of the population, about 3 percent, is on sodium-restricted diets that require sodium intake of less than 2,000 mg/day. The fraction that can be allocated to water varies, depending

on medical judgment in individual instances. Knowledge of the sodium ion content of the water supply and maintenance of it at the lowest practicable concentration is clearly helpful in arranging diets with suitable sodium intake. In many diets allowance is made for water to contain 100 mg/liter of sodium.

"It appears that at least 40 percent of the population would benefit if total sodium ion intake were maintained at less than 2,000 mg/day. Provided that sodium ion concentration in the water supply were less than 100 mg/liter, the contribution of water to the desired total intake of sodium would be 10 percent or less at a daily consumption of two liters."

Organic Compounds - Three of the four sampling rounds for organics in drinking water as part of the National Organics Monitoring Survey (NOMS) have been completed. The final round is due to be carried out this fall. The data from the first three rounds have not yet been published.

EPA has worked with Newport, Rhode Island to help it achieve chloroform reduction, but has had limited success. The city has a consulting engineer working on the design of a new treatment facility.

At the national level there seems to be steady progress towards adopting a standard for trihalomethanes which will be made a part of the Interim Primary Drinking Water Regulations. EPA has published a treatment guide for the control of chloroform and other trihalomethanes.

SOLID WASTE MANAGEMENT

On October 21, 1976 the President signed into law the Resource Conservation and Recovery Act (RCRA). This new Act amends the Solid Waste Disposal Act of 1965 and has three basic objectives: to abate the open dumping of solid waste, to control hazardous waste from generation to disposal, and to stimulate resource conservation and recovery programs. This new law will have significant impact on land disposal and hazardous waste disposal practices and resource conservation and recovery programs in the future.

This new law requires EPA to develop land disposal criteria by October, 1977 which will define what constitutes environmentally acceptable land disposal practice. The state solid waste agencies will be responsible for conducting a phased inventory of all existing disposal sites during fiscal year 1978 in order to determine their status in relation to the federal land disposal criteria. The names of noncomplying sites will be subject to the citizen suit provisions of the new federal law.

EPA is also required to promulgate standards and regulations pertaining to the generation, transportation, storage, treatment, and disposal of hazardous waste by April 1978. Regulated firms must comply with the standards within six months after promulgation. Treatment, storage, and disposal facilities will also be required to have permits to operate.

New England now has two states which have enacted mandatory deposit laws. The Maine referendum on the mandatory deposit question was enacted during their current legislative session. The mandatory deposit law will go into effect on January 1, 1978. Vermont has had a similar law in effect since 1972. Similar legislation was proposed but failed to pass in other New England states.

Interest in local recycling continues to grow in New England. The response to a recent questionnaire sent to municipal and environmental groups identified approximately two hundred municipally-sponsored recycling projects in New England. EPA funded projects designed to demonstrate curbside separation techniques in Marblehead and Somerville, Massachusetts continued to operate.

The progress of the programs can be summarized as follows. Through December 1976, Somerville recovered 8 percent of its total residential solid waste and Marblehead recovered 24 percent. In economic terms, the programs have resulted in a $2,816 loss for Somerville and a gain of $27,850 for Marblehead. These figures assume that the municipalities purchased the recycling vehicles. However, because EPA paid for the

vehicles, the economic benefits are considerably greater than indicated above. Furthermore, these figures do not reflect the environmental benefits of conserving landfill capacity and reducing the consumption of virgin materials.

During June, 1977, an office paper recycling program was initiated in the John F. Kennedy Federal Building. This program will serve approximately 4,000 people within the building and will serve as a prototype for similar programs at other federal facilities in the region. These programs are mandatory for federal facilities as a result of Materials Recovery Guidelines promulgated under the Solid Waste Disposal Act of 1965 as amended.

The New England solid waste management agencies continued to work on the implementation of resource recovery options. The Connecticut Resource Recovery Authority's project in Bridgeport, Connecticut began construction during December 1976 and is scheduled to begin operation during March of 1978. The Rhode Island Solid Waste Management Corporation issued a Request for Qualitifations during January 1977 as a preliminary step to selecting a resource recovery system to serve the disposal needs of the Greater Providence area. The Massachusetts Bureau of Solid Waste Disposal is currently negotiating a final contract with Universal Oil Products to construct a resource recovery system which will generate electric power for sale to New England Electric. This facility will serve municipalities in northeastern Massachusetts. The project received a temporary setback when the voters of Haverhill rejected the proposed site location. Approval for an alternative site is presently being finalized. Additional projects are in the planning phases for west suburban Boston, Worcester, and Springfield, Massachusetts.

There is a great deal of activity in northern New England in terms of development of small scale resource recovery systems. Four additional facilities were constructed in New Hampshire during the past year; seven are currently in existence. These facilities incorporate separation of recyclable material in the home followed by simple processing, i.e. baling paper, cans, etc., at the recycling facility so as to facilitate transport and sale at the nearest market. In Maine, the City of Auburn with assistance from EPA is currently implementing a small energy recovery system which will use the City's solid waste to produce steam for use by a local industry. A similar system is being considered by Pittsfield, Massachusetts.

Two New England states -- Rhode Island and Massachusetts -- have completed hazardous waste surveys, and three other states -- Connecticut, New Hampshire, and Maine -- are in the process of completing surveys. These surveys will be valuable to the development of comprehensive hazardous waste management programs. In May of 1977 Vermont passed comprehensive solid waste management legislation which provides enabling authority to allow the Agency of Environmental Conservation to regulate hazardous wastes from the point of generation to ultimate disposal. The Vermont

legislation represents an important step toward assuming authorization for the hazardous waste permit provisions of the new federal law.

The Regional Office of EPA completed a PCB (polychlorinated biphenyl) waste management survey in November 1976. The PCB waste disposal problem which was identified in the survey points out a serious problem facing the states and EPA in the hazardous waste management area, i.e. that there is an absence of environmentally acceptable ultimate land disposal capacity for hazardous waste in New England.

Progress has been made in responding to several specific hazardous waste problems in the region. The Massachusetts Department of Environmental Management with the assistance of EPA was able to negotiate a contract with a private company to process and dispose of 200 tons of excess pesticides which has been stored at a state park in Hingham, Massachusetts. The wastes were placed in containers and transported to a state-approved facility for processing and disposal.

TOXIC SUBSTANCES

In recent years there has been a growing concern not only in New England but throughout the nation about the serious health and environmental effects of the use of chemicals. Nevertheless, chemicals continue to be developed and introduced at a rapid rate -- up to 1,000 chemicals a year -- for use in industries and homes.

In an effort to protect human health and the environment, Congress passed the Toxic Substances Control Act on October 11, 1976. This Act mandates the Environmental Protection Agency to obtain from industry data on the production, use, and health effects of chemicals and to require testing of chemicals suspected of being harmful. The law also requires manufacturers of chemicals to notify the Administrator of EPA about new chemical substances prior to their release in the marketplace. If a new or existing chemical is determined to pose significant environmental or health hazards, its use may be banned or otherwise regulated by the Administrator.

A chemical of particular concern to New England at this time is polychlorinated biphenyls (PCB's). PCB's in the New Bedford, Massachusetts area have contaminated the Acushnet River to the extent that the State Public Health Commissioner has advised the public not to eat bottom feeding fish, shellfish, and eels caught in the River. Lobster beds in the area where New Bedford Harbor empties into Buzzards Bay were closed and further studies are underway to determine whether the ban will be extended to finfish and clams. The New Bedford landfill, which contains 500,000 pounds of PCB's, is being monitored to assure that leachate is not causing further water contamination. To combat the contamination by industrial discharges of PCB's, clean-up permits have been issued to the two principal users of PCB's in the New Bedford area. As a result, industrial discharges have been significantly reduced.

Another area of concern in Massachusetts is the Hoosic River, which flows out of North Adams and into which the Sprague Electric Company of North Adams has discharged PCB's. EPA tested the Hoosic River in April, 1976, and found PCB concentrations of 12.2 ppm in fish. Five parts per million is the tolerance level established by the U. S. Food and Drug Administration. EPA has taken action to reduce Sprague's PCB discharge through a compliance schedule for meeting permit limitations.

The Housatonic River is again of concern to both Massachusetts and Connecticut with respect to PCB contamination. A General Electric factory in Pittsfield, Massachusetts is suspected of being the source of PCB's in the Housatonic River.

Results of EPA sampling in May and June 1972 and again in August 1975 showed ambient water values in the Housatonic ranging from approximately .03 ppb of PCB's upstream of the G. E. outfall, to .42 ppb below the outfall. Sediment readings from the river bottom ranged from 0.5 ppm upstream, to 139 ppm, 26 ppm, and 1.4 ppm successively downstream. Analyses of fish collected from the Housatonic below Pittsfield revealed concentrations three and seven times the tolerence level.

Samples of the Housatonic in Connecticut taken from February to July 1977, were analyzed by the Connecticut Health Department. Results thus far indicate considerable PCB contamination of the Housatonic from West Cornwall to Cornwall. Analysis of brown trout from this area showed PCB concentrations of from 14 to 45 ppm.

General Electric was issued a "clean-up" permit effective July 1, 1977, but claims to have ceased discharging PCB's to the Housatonic as of March, 1977.

In Maine, the only area discovered thus far that is subject to PCB contamination is located at the F. O'Connor Company Scrap Yard in Augusta. The Yard receives PCB's from reject capacitors and transformers from local utilities. The yard has two lagoons which drain into Riggs Brook and eventually into the Kennebec River. Oil from these lagoons analyzed by EPA showed PCB levels of 10,000 to 20,000 ppm (1 to 2 percent).

A joint survey of this problem was conducted in December, 1976 and March, 1977 by the Maine Department of Environmental Protection and EPA. The results led to enforcement by the Maine DEP which is currently underway to prevent further contamination and rectify the present situation.

Vermont has one major user of PCB's -- Jard Company, Inc. of Bennington. In the past, Jard disposed of large quantities of unusable capacitors containing significant amounts of PCB's in the Bennington landfill. Preliminary results of PCB analysis of water pumped from sample wells in the landfill area have not indicated any groundwater contamination by PCB's. However, the Solid Waste Program at EPA conducted a PCB waste management study of New England in 1976, and analysis of samples from the Bennington landfill indicated that PCB's were contained in the leachates leaving the land disposal site.

To date none of the fish taken from Vermont waters for PCB analysis have shown concentrations in excess of the present FDA limit. The highest known value of 1.3 ppm total PCB was found in white suckers taken from the Hoosic River in Southern Vermont in December, 1975.

To date there have been no reported problems of PCB contamination in either Rhode Island or New Hampshire.

PESTICIDES

A good deal of progress has been made in New England in implementing the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and its various amendments.

Five New England states have formally submitted plans to EPA for certification of applicators of restricted use pesticides. Massachusetts is expected to submit a plan sometime in 1977 if the proposed state law is favorably acted upon by the legislature.

Certification programs are designed to ensure that users have the competence to handle restricted-use pesticides without causing danger to themselves, the public, or the environment. The certification program will also allow continued use of certain products that might otherwise have to be withdrawn from the market because of potential danger to people or the environment if these chemicals were to be used by the general public. Applicator certification is primarily a state responsibility. State authorities develop plans based on federal standards and these plans must be approved by EPA.

Applicator training programs have been established in all six states for both private and commercial applicators. EPA has provided both technical and financial assistance to the six states to help in the development and implementation of the state plans and for training applicators.

One of the major functions of the states under their pesticide plans is to certify applicators using tests based on federal standards to determine that the applicator is competent to apply the materials without endangering the environment, himself, or the public. Tests must be given to both private applicators and commercial applicators. One of the major problems concerning states at this time is the lack of a restricted pesticide use list. Since many private applicators throughout the region use only a few pesticides in their work, it is unclear to some whether or not to become certified. Thus, the state agency can only estimate the total number of private applicators who will finally be certified.

Table 7 summarized the progress made toward certifying pesticide applicators in each state.

State Registration of Pesticides to Meet Special Local Needs

FIFRA, as amended, requires EPA registration of all pesticides whether sold or distributed in interstate or intrastate commerce. There are many "minor pesticide uses" for which EPA registration has not and probably will not be requested. There are also local conditions necessitating deviations from an EPA approved label for purposes of effective pest control or environmental protection.

It was the intent of Congress that Section 24(c), Authority of States-Registration for Special Local Needs, would be employed to help deal with these speciality or local use problems. States may request certification of state programs for such registration. At present, interim certification has been granted to Connecticut, Maine, New Hampshire, and Vermont to issue 24(c) registrations.

STATUS ON 24(c) REGISTRATION AS OF 5/31/77

State	N. Approved 24(c) Registrations	No. Disapproved
CT	3	1
ME	3	0
NH	2	0
VT	6	0

Accident Control Programs

As of May 16, 1977, the staff and the functions of the Pesticide Episode Response Branch, Operations Division, were detailed to the Technical Services Division, Human Effects Monitoring Branch (HEMB). The HEMB is to be the principle recipient, respository, and coordinator of pesticide incident data within the Office of Pesticide Programs (OPP). The HEMB will maintain the OPP data base for pesticide incidents, and will also be responsible for monitoring and confirmation of incidents, providing an appropriate response, and finally for disseminating incident data and information. In 1976 there were twenty-two reported pesticide, or suspected pesticide, related incidents in this region. Examples include the misuse of the insecticide ISOTOX by a teenage boy which resulted in his hospitalization and treatment, and a fish kill in Maine which resulted when an oat farmer flushed out his tank too near a stream after using a GUTHION, 2,4-D mixture.

Enforcement

This year has been a significant one for pesticides enforcement. A major achievement is the development of a vigorous use surveillance program. To date we have conducted 39 investigations on the use of registered and experimental pesticides to assure that they are being used according to label directions. We have referred nineteen use cases. Of these cases, we have issued two notices of warning and recommended the issuance of three more notices of warning which are pending concurrence. It is important to understand that until pesticide applicators are certified as competent by the states, no later than October 1977, a notice of warning is the strongest action that can be brought for the misuse of a pesticide, unless the user is a distributor of pesticides or has previously been warned. After October 1977, civil penalties can be assessed against commercial applicators beginning with the first violation and against everyone else (including homeowners) beginning with the second violation.

Pesticides enforcement has also continued its strong surveillance of pesticide producers. During the first half of the year, 42 pesticide producing establishments and 47 distributors were inspected and 100 pesticide samples were collected. Enforcement action resulting from producer and distributor surveillance includes the referral to EPA's Enforcement Division of seventeen civil cases. These cases involve proposed penalties totalling over $55,000. In addition, we requested two recalls and issued three stop sale, use or removal orders. There were also 46 notices of warning issued for minor violations.

In addition to the above accomplishments, we have also completed negotiations of enforcement grants with two states. These state-federal cooperative agreements will enable us in future years to expand the enforcement of pesticide laws by delegating some of the responsibilities to state regulatory officials.

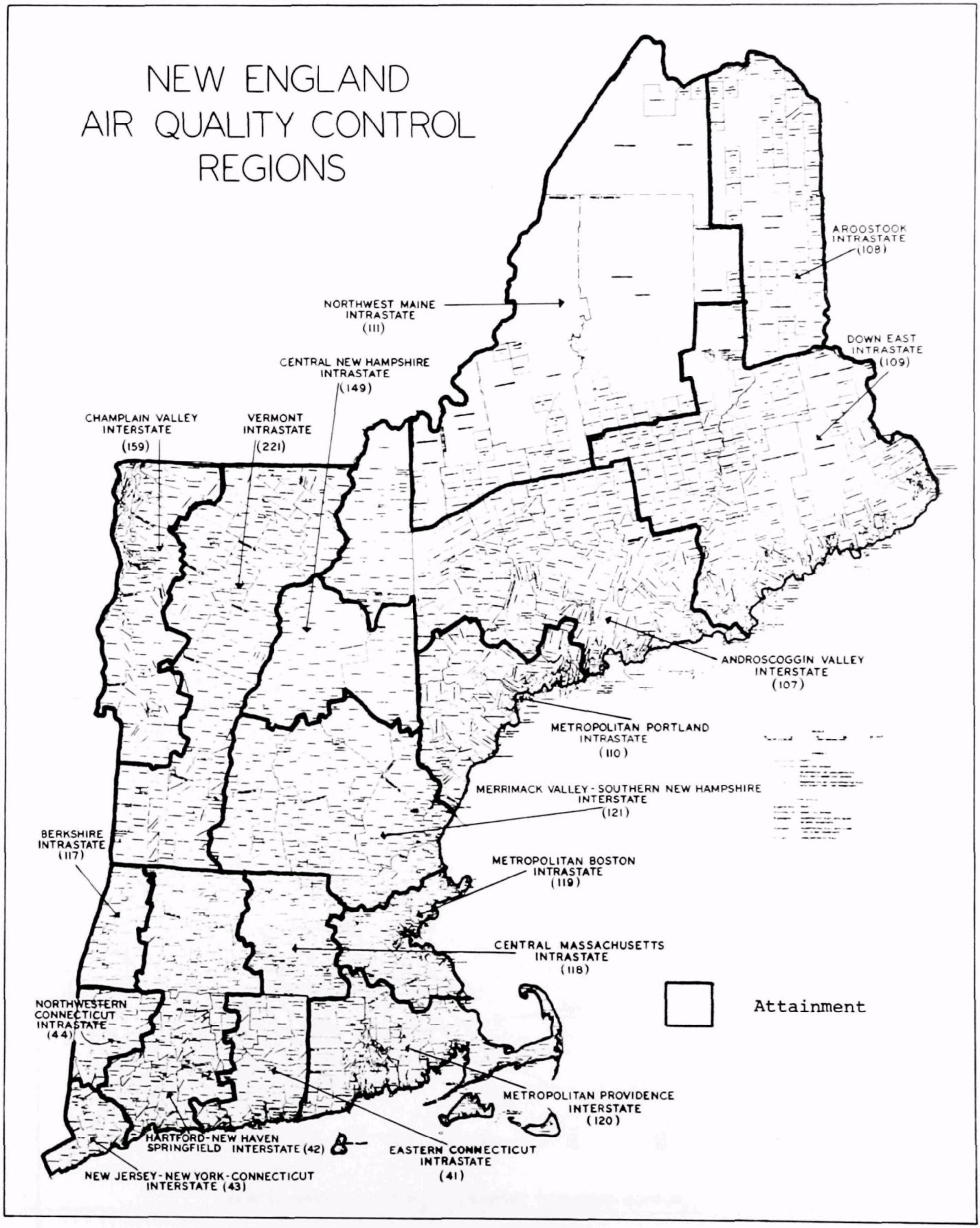
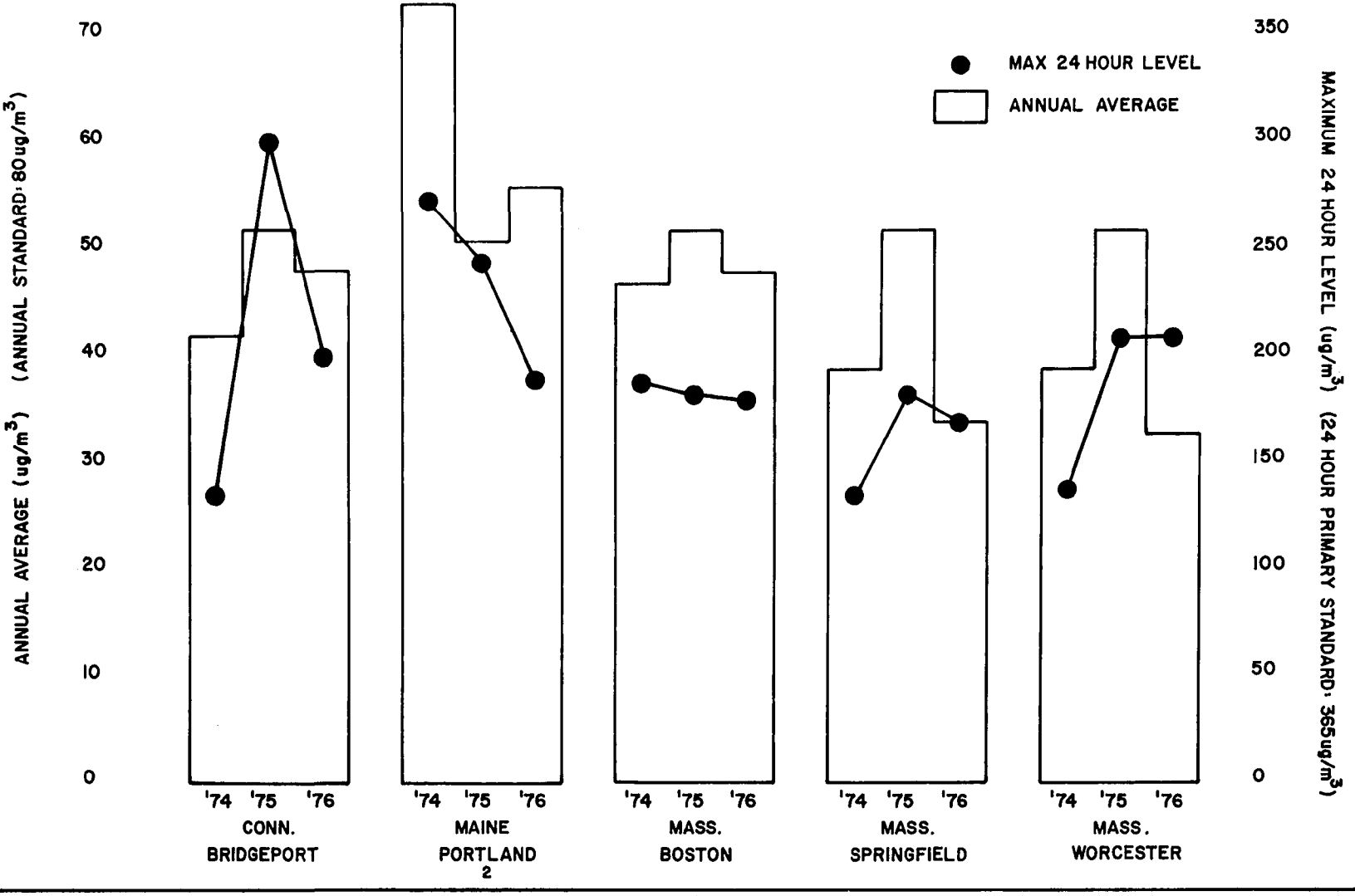


Figure 1 - SO_2 Attainment/Non-attainment Status

TABLE 1.

SULFUR DIOXIDE–ANNUAL AVERAGE MAXIMUM 24 HOURLY LEVELS TRENDS 1974-1976

NEW ENGLAND SITES



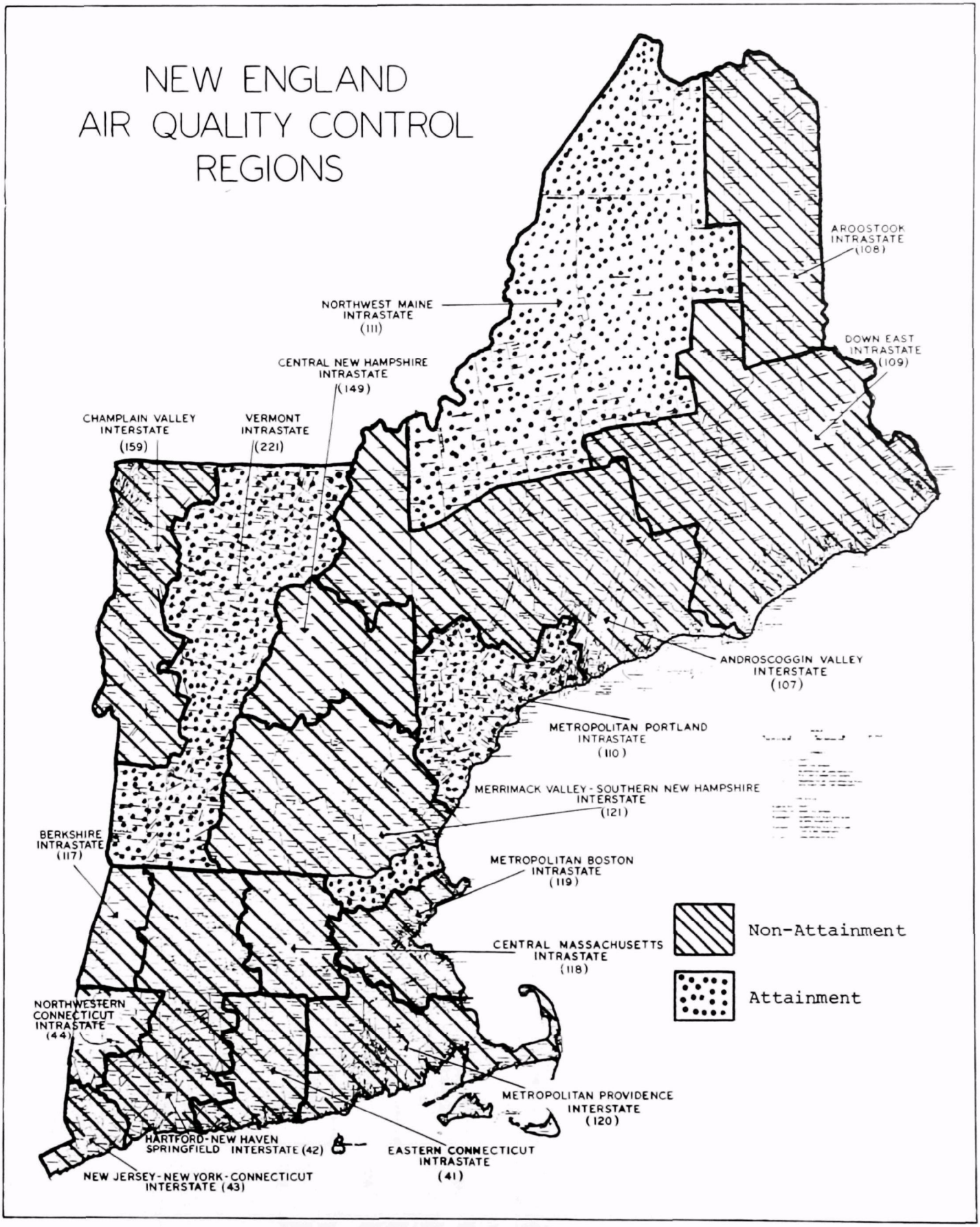
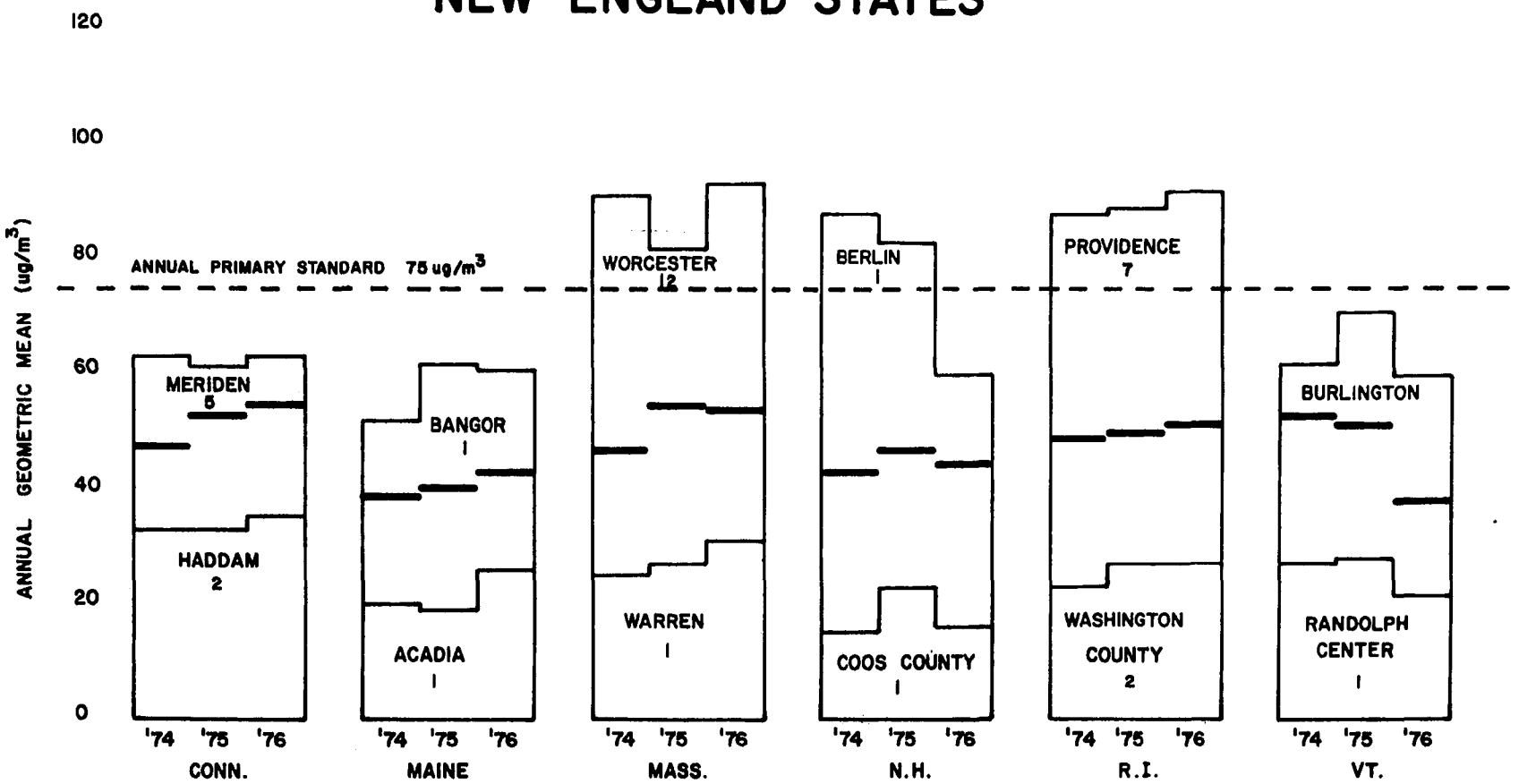


Figure 2 - TSP Attainment/Non-attainment Status

TABLE 2.

TOTAL SUSPENDED PARTICULATES - ANNUAL GEOMETRIC MEAN - TRENDS 1974-1976

NEW ENGLAND STATES



NEW ENGLAND AVERAGE

1974 : 46.7 ug/m3

1975 : 50.3

1976 : 50.0

: STATE AVERAGE FOR YEAR

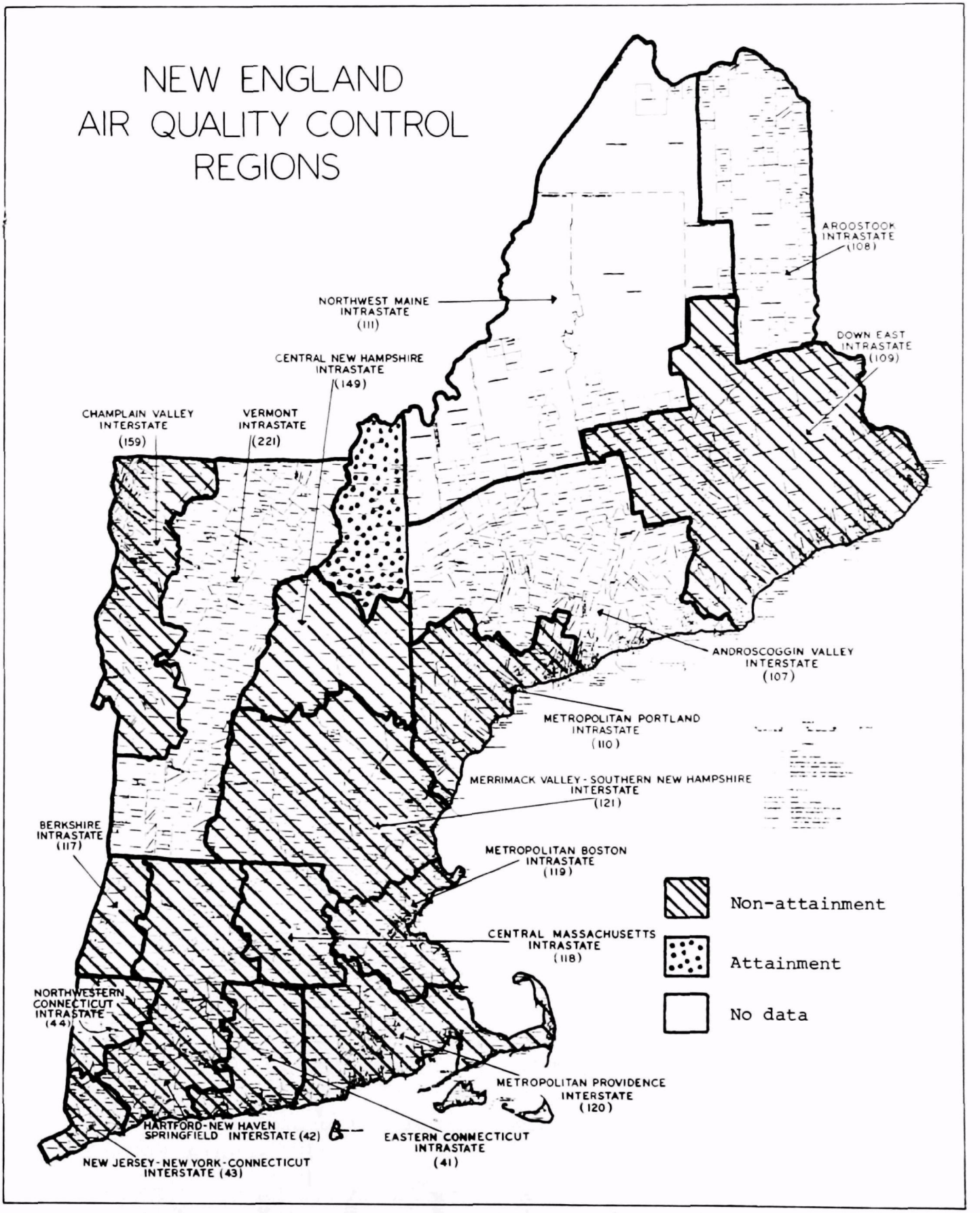
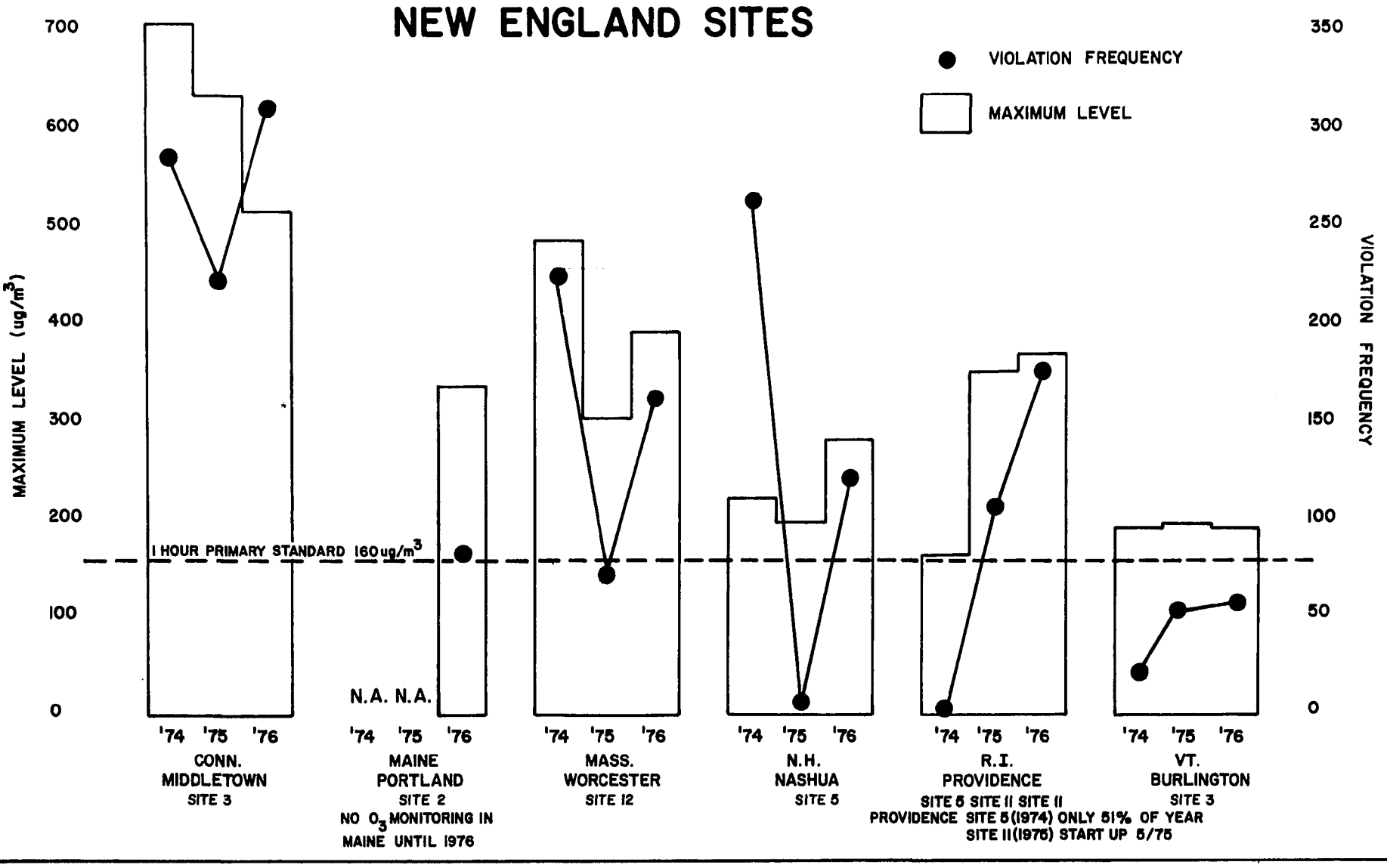


Figure 3 - Ozone Attainment/Non-attainment Status

TABLE 3.

OZONE - MAXIMUM LEVEL, VIOLATION FREQUENCY - ONE HOUR STANDARD TRENDS 1974-1976



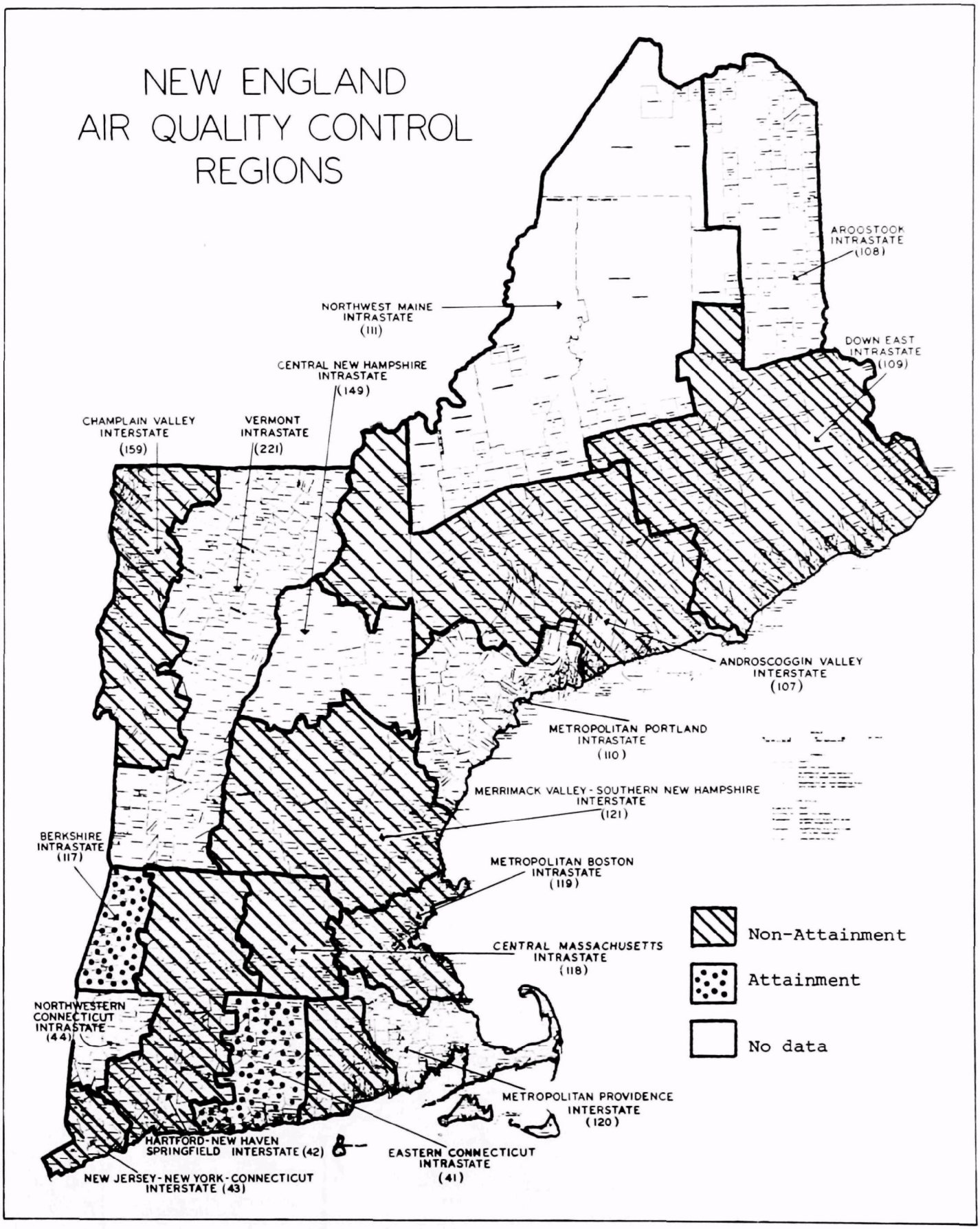
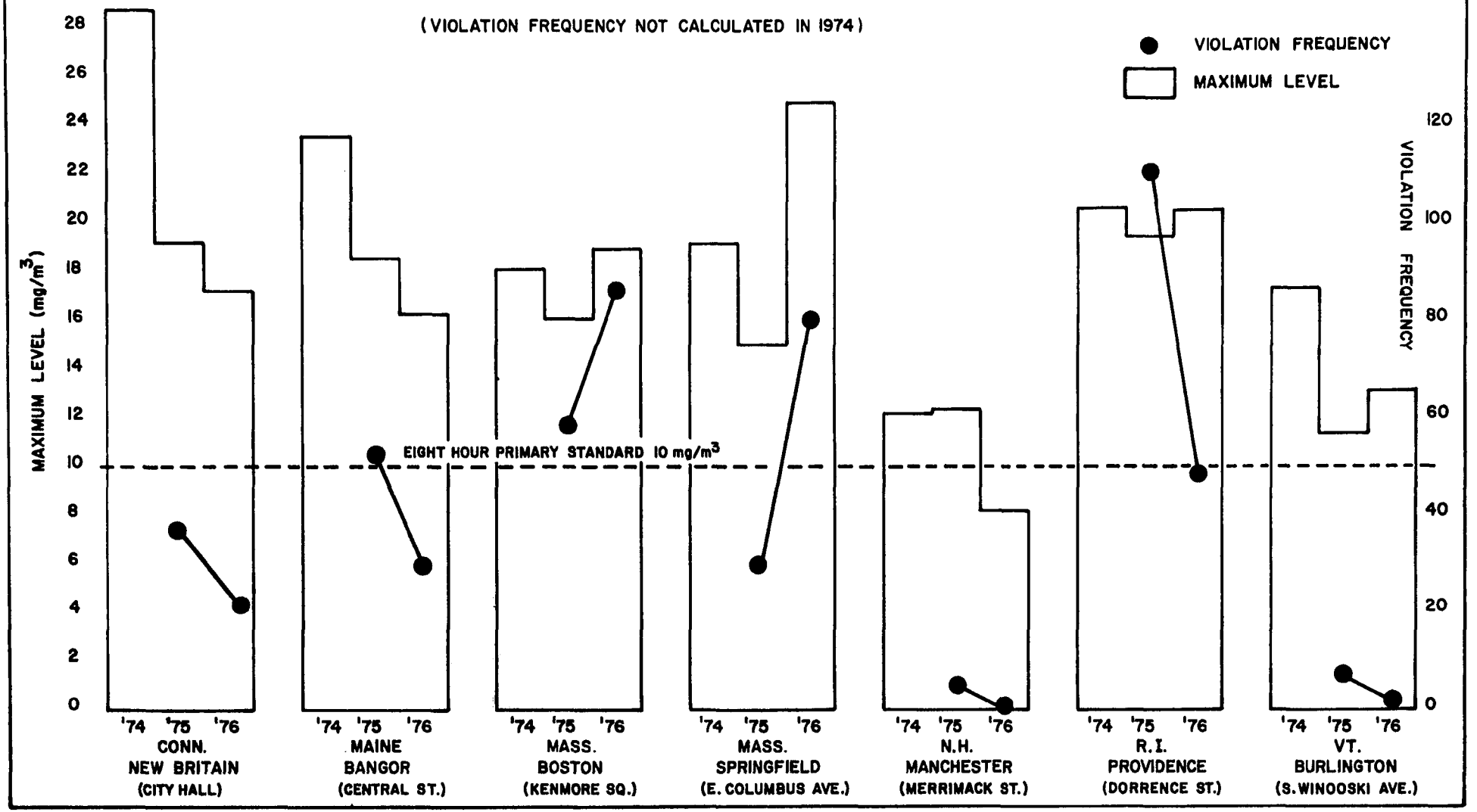


Figure 4 - CO Attainment/Non-attainment Status

TABLE 4.

CARBON MONOXIDE-MAXIMUM LEVEL, VIOLATION FREQUENCY-EIGHT HOUR STANDARD TRENDS 1974-1976

NEW ENGLAND SITES



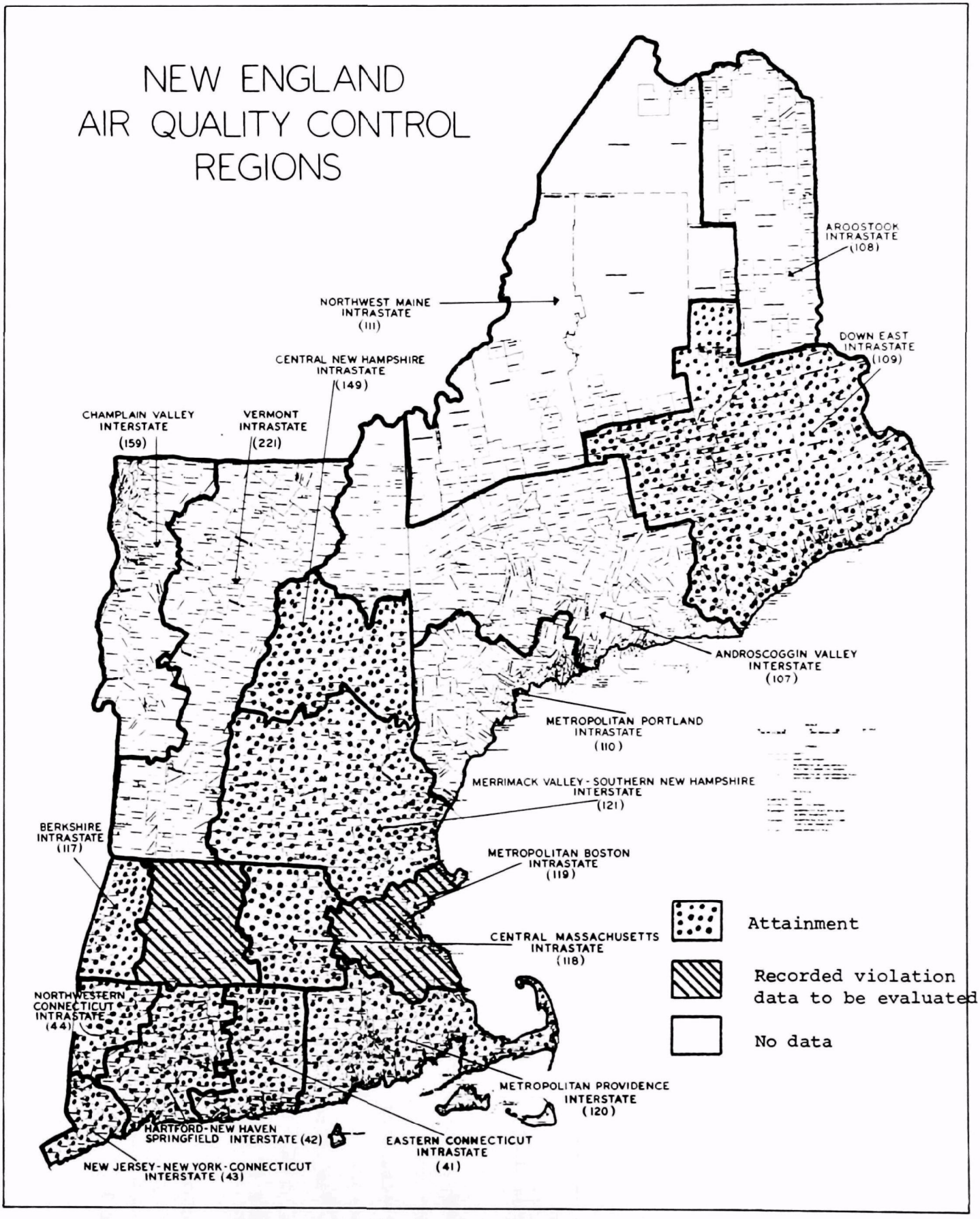


Figure 5 - NO_2 Attainment/Non-attainment Status

TABLE 5

NEW ENGLAND SUMMARY - Main Stem and Major Tributary River Mileage Meeting Federal and State Standards

State	Miles Assessed	Miles Meeting Class "B" Fishable/Swimmable 1977 Miles	1977 %	1976 Miles	1976 %	% Change	Miles Meeting State Water Quality Standards 1977 Miles	1977 %	1976 Miles	1976 %	% Change
1. Connecticut	409	207	51	173	42	+ 8	207	51	173	42	+ 8
2. Maine	1930	1204	62	1151	60	+ 2	1753	91	1714	89	+ 2
3. Massachusetts	1474	410	28	356	24	+ 4	480	33	450	31	+ 2
4. New Hampshire	1298	591	46	562	43	+ 3	596	46	564	43	+ 3
5. Rhode Island	329	211	64	211	64	0	303	92	303	92	0
6. Vermont	1103	686	62	686	62	0	708	64	708	64	0
Total	6543	3309	51%	3139	48%	+ 3%	4047	62%	3912	60%	+ 2%

TABLE 6

SUMMARY OF WATER QUALITY
State of Connecticut 1977

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems M= Municipal I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Connecticut	69	23	23	23	46	3,6	M, I, CS
Farmington	54	54	54	54	0	6	M
French	6	0	6	0	6	2, 5, 6	M, I
Hockanum	17	2	17	2	15	2, 3, 5,6	M, I, NPS
Housatonic	80	80	80	80	0	3,6	CS
Naugatuck	35	20	35	20	15	1,2,4,5,6	M, I, CS, NPS
Pawcatuck	11	0	0	0	11	2,5,6	M, I
Pequabuck	15	3	15	3	12	2,3,5,6	M, I, NPS
Quinebaug	42	0	42	0	42	2,5,6	M,I, NPS
Quinnipiac	34	7	34	7	27	2,3,5	M
Shetucket	18	7	18	7	11	2,6	M,CS, NPS
Thames	17	0	17	0	17	2,3,5	M, I, CS, NPS
Yantic	11	11	11	11	0	5,6	I, CS
Total	409	207	352	207	202		
%		51%	86%	51%	49%		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

TABLE 6

SUMMARY OF WATER QUALITY
State of Maine 1977

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems M= Municipal I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Penobscot	379	180	364	364	15	4,5,6	M,I
Kennebec	325	200	263	263	62	4,5	M,
Androscoggin	320	150	314	314	6	1,2,5,6	M,I
St. John	351	269	308	289	62	2,5,6	M,I,NPS
Salmon Falls (Piscataqua)	157	120	157	157	-	5,6	M
Saco	230	212	227	227	3	1,5,6	M,I
St. Croix Mainstem & Monument Bk.	87	47	77	77	10	5,6	I
Presumpscot	58	21	58	51	7	5,6	M,I
Mousam	23	5	11	11	12	3,5,6	M
TOTAL	1930	1204	1779	1753	177		
%		62%	93%	91%	9%		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

TABLE 6

SUMMARY OF WATER QUALITY
State of Massachusetts 1977

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems M= Municipal I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Blackstone	107	36	68	36	71	1,2,3,5,6	M,I,CS
Boston Harbor	44	0	20	7	37	1,2,3,5,6	M,I,CS,NPS
Buzzards Bay	45	37	45	37	8	1,5,6	M,I
Charles River	80	1	51	1	79	1,2,3,5,6	M,I,CS,NPS
Chicopee	111	49	70	72	39	2,3,5,6	M,I
Connecticut	68	6	52	6	62	1,2,3,5,6	M,I,CS
Deerfield	70	38	60	44	26	2,6	M,NPS
Farmington	18	18	18	18	0	-	-
French-Quinebaug	57	19	38	23	34	2,5,6	M,I,NPS
Hoosic	43	17	25	20	23	1,2,3,5,6	M,I,NPS
Housatonic	96	26	69	31	65	1,3,5,6	M,I,NPS
Ipswich & Parker	67	34	67	34	33	6	NPS
Merrimack	115	4	86	4	111	2,3,5,6	M,I,CS
Millers	57	17	48	17	40	2,4,5,6	M,I
Nashua	103	5	53	5	98	5,6	M,I,CS,NPS
Sub-totals	1102	319	791	367	735		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

TABLE 6

SUMMARY OF WATER QUALITY
State of Massachusetts (cont'd)

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems M= Municipal I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Sub-totals	1102	319	791	367	735		
North River	21	12	21	12	9	2,5,6	M,NPS
SuAsCo (Sudbury, Assabet,Concord)	86	0	77	0	86	3,5,6	M,NPS
Taunton	134	18	100	35	99	1,2,3,5,6	M,I,CS,NPS
Ten Mile	38	4	25	4	34	1,2,3,5,6	M,I,NPS
Westfield	114	69	109	74	40	2,5,6	M,I
TOTALS	1474	410	1102	480	994		
%		28%	75%	33%	67%		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

TABLE 6

SUMMARY OF WATER QUALITY
State of New Hampshire 1977

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems D= Domestic I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Androscoggin	65	42	50	42	23	2,5,6	D,I,CS
Connecticut	470	104	452	104	367	2,4,5,6	D,I,CS
Merrimack	488	262	463	267	222	2,5,6	D,I,CS
Piscataqua & Coastal	181	90	181	90	91	2,5,6	D,I,CS
Saco	94	94	94	94	0		
TOTALS	1298	591	1239	596	702		
%		46%	96%	46%	54%		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

TABLE 6

SUMMARY OF WATER QUALITY
State of Rhode Island - 1977

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems M= Municipal I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Blackstone	89	48	54	76	13	5,6	M, I, CS
Moosup	25	25	25	25	0	-	-
Moshassuck	17	8	10	14	3	5,6	M, NPS
Naragansett Bay	117,764 Acres	107,959 acres	112,832 acres	107,959 acres	9,805	6	M, I, CS, NPS
Pawcatuck	115	94	103	111	4	5,6	M, I
Pawtuxet	60	28	30	56	3	5,6	M, I
Woonasquatucket	23	8	13	20	3	5,6	M, NPS
Total	329	211	235	303	26		
%		64%	71%	92%	8%		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

SUMMARY OF WATER QUALITY
State of Vermont 1977

Major Water Areas (including mainstem & major tributaries)	Total Miles Assessed	Miles now meeting Class B (fishable/ swimmable) standards or better	Miles expected to be Class B or better by 1983	Miles now meeting State water quality standards	Miles not meeting State water quality standards	*Water quality problems	Source of Water Quality Problems M= Municipal I= Industiral CS= Combined Sewers NPS = Nonpoint Source
Battenkill,Walloomsac Hoosic	46	25	43	27	19	1,2,5,6	M,I
Poultney,Mettawee	44	36	40	38	6	2,6	M
Otter Creek	83	70	76	77	6	2,5,6	M,NPS
Lake Champlain	25	19	20	23	2	2,3,5,6	M,NPS
Missiquoi	88	61	82	20	67	2,3,6	M,I
Lamoille	90	21	69	14	70	2,3,5,6	M,NPS
Winooski	115	72	95	85	30	2,3,5,6	M,I
White	69	54	59	59	10	2,6	M,I
Ottaquechee	65	19	38	37	28	1,2,6	M,I
West,Williams,Saxton	76	71	74	74	2	2,3,6	M,NPS
Deerfield	34	24	34	16	18	2,3,6	M
Connecticut	238	153	170	172	66	1,2,5,6	M,I
Stevens,Wells,Waits	16	6	12	6	10	6	M,I
Passumpsic	47	20	28	25	22	1,2,3,5,6	M,I
Lake Memphremagog	67	35	61	35	32	2,3,6	M,NPS
Black,Barton,Clyde							
TOTALS	1103	686	901	708	388		
%		62%	82%	64%	35%		

*Water quality problems
1. Harmful Substances; 2. Physical Modification (Suspended Solids, Temp., etc.);
3. Eutrophication potential; 4. Salinity, acidity, alkalinity;
5. Oxygen depletion; 6. Health Hazards-(coliform)

Table 7

PROGRESS TOWARD STATE CERTIFICATION OF PESTICIDE APPLICATORS

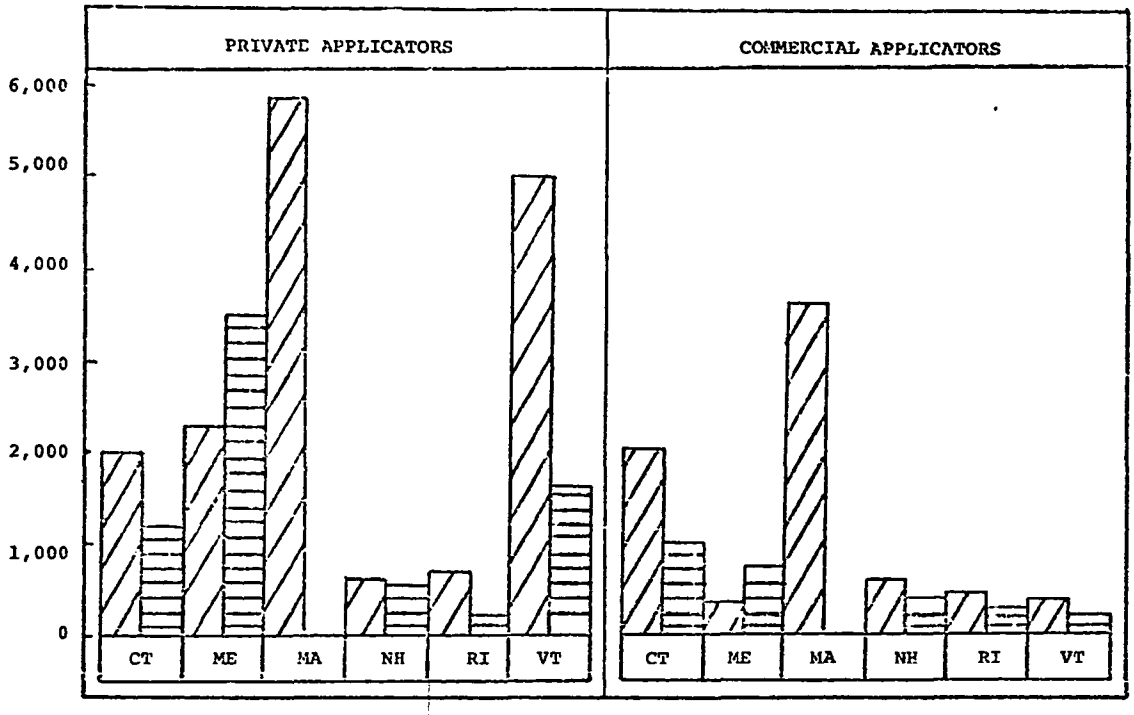


Figure 2 Progress Toward State Certification of Pesticide Applicators

No. estimated in State plan =

No. Certifiable May 1, 1977 =

☆U.S. GOVERNMENT PRINTING OFFICE: 1977 701-682/149