United States
Environmental Protection
Agency

Region1, New England Office
RAA

EPA901-R-97-001
April 1997

State of the New England Environment

1997

This report is dedicated to the memory of
U.S. Senator Paul E. Tsongas of Massachusetts
1941 - 1997

His honesty, good humor, optimism, and perseverance served New England's environment well and stand as guideposts for all of us in our journey toward the cleaner, healthier planet for which he fought so hard.

OPEN LETTER TO THE PEOPLE OF NEW ENGLAND

1997

Even if you're on the right track, you'll get run over if you just sit there.
–Will Rogers

C. Franks

The character of New Englanders reflects a culmination of influences as disparate as they are positive. Fiercely independent, yet rooted in community; strongly traditionalist, yet consistently revolutionary in action; we are a people as varied and vital as our natural setting.

These crosscurrents have defined EPA's work in New England over this past year as well. Our use of traditional means of environmental protection has been sharpened – a record year in criminal enforcement actions and aggressive use of our authority under the National Environmental Policy Act, for example – even as we have developed exciting new approaches – StarTrack, CLEAN, State Performance Partnership Agreements, and Brownfields among them – to respond to new challenges.

Will Rogers once said, "Even if you're on the right track, you'll get run over if you just sit there." We have taken those words to heart. The course we charted three years ago – to bring about cultural and organizational change within our agency, utilize sounder science and stronger economics in our efforts, and transform this office into a force for education and empowerment of others – is serving the environment and the taxpayers well.

We have focused on places, not programs, and addressed environmental problems more holistically. We have striven to enlighten the regulated community, working with them on an industry by industry basis, and in the process, we have increased compliance and reduced pollution. We have opened our ears and extended our hands to New England communities, environmental advocates, and businesses, and learned from them how to better target our all-too-limited resources.

To complete the task, we have to move forward with even greater energy and discipline. In many ways, it will mean building and expanding on the directions initiated by previous generations of environmental policy makers. In others, it will mean forging new paths and generating new ideas for making EPA better able to handle the complex, ever changing challenges of environmental protection.

It has been said that environmental protection is the most successful area of public policy in our generation. Here in New England, we will not forget the lessons that have made our efforts successful. But neither will we walk into the future with our gaze fixed over our shoulder. Combining new tools with past experience, we will continue to work hard on behalf of New England's environment.

In this next year, as we have over the past twelve months, we at EPA will work with all of you to help bring common sense to our common problems for the common good and to make all of New England a safer, healthier, more beautiful place for all who follow.

John P. DeVillars
Regional Administrator
EPA's New England Office

Please note, signatures have been removed from this document.

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We shall not cease from exploration
and the end of all our exploring
shall be to arrive where we started
and know the place for the first time.
–T. S. Eliot

C. Franks

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INTRODUCTION

You grasp the bark by a rugged pleat,
And look up small from the forest's feet.
The only leaf it drops goes wide,
Your name not written on either side.
–Robert Frost

C. Franks

New England has a special identity for all of us in the United States. It is a distinct part of our sense of history, our sense of place on the continent. It is familiar to us even if we live in other parts of the country; its forests, rivers, and coasts were the first places the pilgrims settled; it is the place where our democracy began. It is filled with Native American history, with legends and traditions, with seasons.

Our mountains and forests are not part of a distant wilderness, they are where we live and work and play. The ocean, too, is just outside our door. All of New England's natural environment is within our reach. This proximity, this mixture of people and nature, makes our work here particularly meaningful. In New England, we are face to face with the challenges and consequences of managing both human needs and environmental protection.

At EPA's New England Office, we recognize that the work we do to protect the environment becomes a lesson for the larger world as well. What we learn, how well we work together, how creatively we approach a task, and how effectively we judge the results can serve as a model for environmental protection everywhere. To better meet these challenges, EPA's New England workforce has directed our organizational resources by using "place-based" approaches and "performance-based" results. We are developing innovative alternatives that go beyond ordinary "end of the pipe" treatments, enabling us to achieve higher environmental protection standards, and to measure our results and successes through tangible improvements in the environment around us.

This report is about the state of the environment in New England, but it also about the state of our ability to ask the right questions and to build an approach to environmental protection based on cooperation and collaboration among many diverse interests. Throughout this report, we highlight stories that illustrate results or innovative ideas put to work to benefit the environment and the people of this region, now and for future generations.

INDICATORS OF PROGRESS

Information about the state of New England's environment provides us with the means to assess our current situation and direct our efforts toward the future. How do we find information that paints an accurate picture of the health and quality of New England's environment and the people who reside here? Through cooperative efforts with our New England states, we have identified a set of key environmental indicators. These are used throughout this report to describe important information about environmental quality.

Indicators are chosen to give us measurable data about environmental conditions that can be compared over time. For example, we can measure ecological health by the percentage of our rivers, lakes, and estuaries that support healthy aquatic communities, or assess the impact on our health by the number of days with good air quality. Environmental indicators contribute to our understanding of the state of our environment, the progress we are making in protecting it, and the changes and challenges we are likely to face in the future.

The better the information we have about the environment, the better our management of the environment will be, the more accountable we will be in our protection of it, and the more accessible and participatory the process of environmental decision-making can be. Building an approach to environmental protection based on cooperation and collaboration among many diverse interests, and working together toward a common goal, are central to fulfilling our mission.

NEW ENGLAND ECOSYSTEMS 1997

Nature is in it for the long haul.
–Jim Harrison

Amelia Katzen

New England is home to a variety of diverse ecosystems. From the dense Northern Forest to wind-blown salt marshes and salt ponds, our region's ecosystems provide a range of habitats for wildlife as large as the black bear to the smallest crabs living among blades of eelgrass. Human activities can significantly alter our environment by affecting interrelated ecosystems throughout our region. Environmental indicators help us characterize the level of stress in an ecosystem, describe an ecosystem's response to human activities and disturbances, and predict where harm to living organisms is likely to occur.

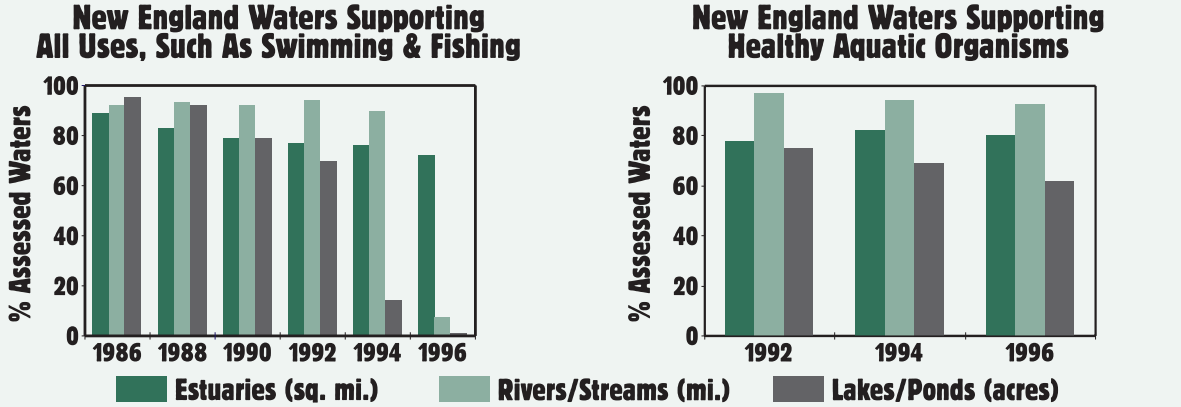
WATERWORLDS: AQUATIC LIFE & BIOLOGICAL ASSESSMENT

Every year, state, local, and federal agencies, along with numerous volunteer monitoring groups, collect information about water quality in streams, rivers, lakes, ponds, and estuaries. Information about water quality, toxicity, and the composition of biological communities forms the basis of most assessments. The presence and numbers of fish species and small aquatic organisms (macro-invertebrates), for example, are good indicators of water and sediment quality, since some are more sensitive to pollution than others.

More than 80% of New England's rivers, and more than 60% of our lakes and estuaries, fully support aquatic life (Figure 1). The most significant problems that have been identified for aquatic life are eutrophication from agricultural and sewage sources, siltation and runoff from silviculture (forestry practices), nuisance aquatic species such as zebra mussels or weeds, stormwater runoff, and low water flow.

Ecosystems Figure 1

Fewer Lakes & Rivers Support All Uses



Source: State 305(b) Water Quality Inventory Reports and Fish Consumption Advisories

Ecosystems Figure 2

Sediments in New England

Locations with potential adverse environmental effects, based on current sediment data

Source: National Sediment Inventory

PROBLEMS IN THE MUD: CONTAMINATED SEDIMENTS

Toxic chemicals in water from industrial facilities, sewage treatment plants, and urban and agricultural runoff tend to settle and accumulate in the bottom sediments of rivers and bays. These contaminants, which include PCBs, pesticides, and metals, can affect the benthic (bottom-dwelling) community or move up the food chain to other fish, birds, and in some cases, humans.

Results obtained from EPA's National Sediment Inventory (NSI) show that, where samples have been collected and reported, sediment contamination is widespread in many New England watersheds (Figure 2). EPA studies have shown that approximately 40% (by area) of southern New England's small coastal estuaries have benthic communities that have been impacted by elevated levels of sediment contamination.

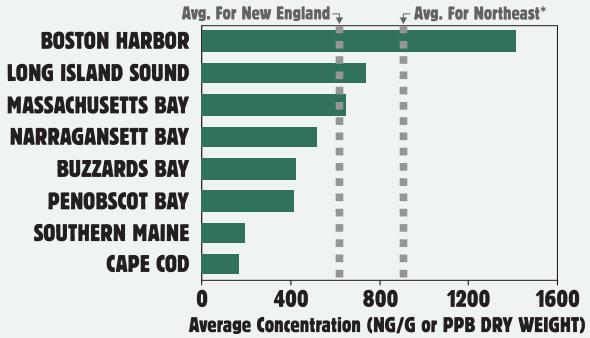
MEANINGFUL MUSSELS: AN INDICATOR SPECIES

Measurements of mussel tissues are often utilized to determine contaminant concentrations in coastal waters because they mirror overall water and sediment quality in an area. The National Oceanic and Atmospheric Administration (NOAA) has been measuring close to 100 different contaminants in mussels at twenty-nine New England sites almost every year since 1986. High concentrations of certain contaminants, such as PCBs and polychlorinated aromatic hydrocarbons (PAHs) near New Bedford Harbor and in urban environments such as Boston Harbor or coastal Connecticut, have been detected in areas where known contaminant releases have occurred (Figure 3).

Between 1986 and 1993, both in New England as a whole and nationally, concentrations of many contaminants in mussels have decreased, some have remained constant, but none have increased. Those chemicals that have declined include: PCBs and the pesticide chlordane, which have either been banned or are no longer used; butylins, formerly used as ingredients in anti-fouling boat paints but since restricted because of their toxicity; and copper, which has not been restricted.

Ecosystems Figure 3

Polycyclic Aromatic Hydrocarbons (PAHS) in Mussels



*Northeast is Delaware to Maine

Source: NOAA, Status & Trends, 1995

SPECIAL PLACES

EPA has embarked on a series of Resource Protection Projects to identify high priority natural resources and to develop and implement strategies to protect them – six priority areas in New Hampshire, nine in Rhode Island, and nine in Connecticut. EPA has targeted twenty-five watersheds and other special places as part of our Community-Based Environmental Protection focus. We are working with community groups, and state and local governments, to set tangible environmental goals and to develop action plans that combine targeted enforcement actions, technical assistance, grant funding, and public education. For example, the Lower Charles River Initiative has set a goal to be fishable and swimmable by Earth Day 2005.

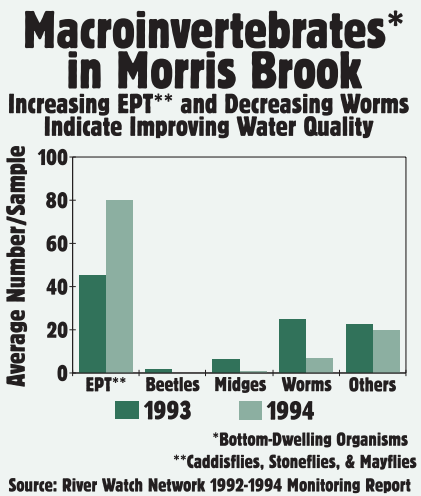
GIANT STEPS IN CLEANING A HARBOR

New Bedford Harbor on Buzzard's Bay in Massachusetts has the potential to provide significant economic and recreational benefits to the region, but decades of inappropriate industrial waste discharges have made it one of the largest PCB-contaminated Superfund sites in the nation. As a result, the Massachusetts Department of Public Health has restricted lobstering and fishing over a 18,000-acre area. As part of a Phase One "hot spot" remedy for the site, 14,000 cubic yards of the most contaminated sediments were dredged and placed in temporary storage.

In 1996, after working with surrounding harbor communities, EPA's New England Office established a broad-based consensus on a Phase Two cleanup approach to dredge and isolate another 500,000 cubic yards of contaminated sediment and explore alternatives for its treatment. Our work in New Bedford has begun the process of restoring the harbor on a scale that can revitalize both its true ecological and economic opportunities.

MORRIS BROOK DAIRY FARM: PROTECTING AQUATIC LIFE

Dale Lewis owns a dairy farm located on Morris Brook, a tributary that feeds into the Connecticut River in New Hampshire. In 1991, he volunteered to join with EPA and the New Hampshire Department of Environmental Services in a project to control erosion and runoff of cow manure and fertilizer entering the brook. Manure storage areas, concrete pads in heavy animal use areas, house and barn roof drains, and a brook crossing were constructed. Volunteers and staff from the Connecticut River Watch Program collected and analyzed water and macroinvertebrate samples to determine whether the biological community would respond to reduction in sediment and manure runoff.



After implementation of runoff controls, the macroinvertebrate community downstream from the Lewis Farm significantly improved; the relative abundance of pollution-tolerant organisms declined, while pollution-intolerant species increased. This improvement can be directly linked to reductions in sediments and manure running off into the stream. As a result of his efforts, Dale Lewis was a recipient of EPA's Environmental Merit Award.

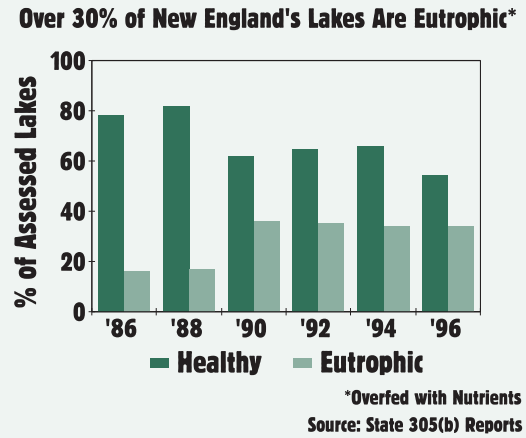
WASHING IN AND RAINING DOWN: EUTROPHICATION & ATMOSPHERIC DEPOSITION

Discharges from sewage treatment plants and non-point sources, such as agricultural runoff and atmospheric deposition, result in increased amounts of phosphorus and nitrogen in New England's lakes, rivers, and coastal bays. This inadvertent over-fertilization causes increased growth of aquatic plants and algae. When these plants die and decompose, the supply of dissolved oxygen in the water is depleted, leaving less oxygen available for other aquatic organisms. This process, called eutrophication, results in low dissolved oxygen, extensive algal blooms, high levels of turbidity (suspended material), fish kills, and loss of sensitive benthic (bottom-dwelling) animals in the ecosystem. Indicators show that about 32% of New England's lakes are eutrophic (Figure 4). Symptoms of eutrophication in estuaries, which include declining eelgrass populations and growth of nuisance algae, have worsened in Buzzards Bay, Narragansett Bay, Long Island Sound, and Waquoit Bay since the 1970s. Records from sewage treatment plants in the region show that the total loads of nitrogen and phosphorus from wastewater treatment plants have either remained the same or increased slightly from 1991 to 1995 (Figure 5).

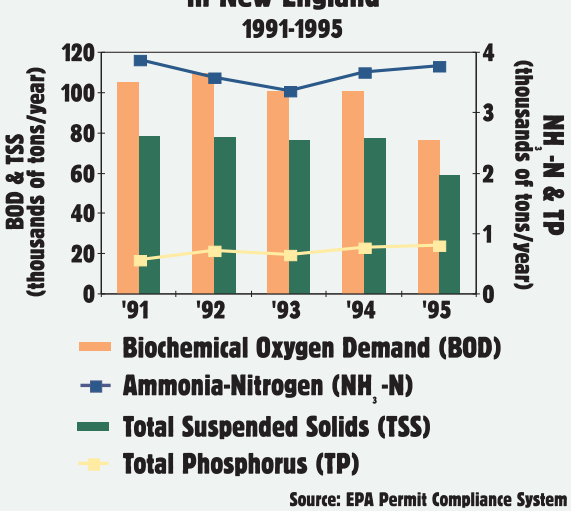
Progress has been made in reducing nitrogen released by sewage treatment plants into some estuaries, particularly in Long Island Sound. Partnerships with local, state, and federal agencies are also needed to stem the increase in eutrophication of New England's lakes and coastal bays.

Atmospheric deposition also contributes to eutrophication, particularly since New England has the highest atmospheric nitrogen loadings in the nation. This is the result of New England's location "downwind" from major sources in the industrial Midwest, automobile traffic in the Washington-to-Boston urban

Ecosystems Figure 4



Ecosystems Figure 5



corridor, and heavier rain and snowfall than other parts of the country. Although sulfate levels have declined since the passage of the 1990 Clean Air Act Amendments, which control sulfur emissions from power plants, nitrate deposition has not declined significantly (Figure 6). EPA is working with the New England states to reduce nitrogen oxides by capping power plant emissions and promoting mass transportation and alternative fuel technologies.

In addition to its role in eutrophication, the air over New England influences both terrestrial and aquatic ecosystems in other ways. Air pollution can damage or inhibit plant and animal growth, and disrupt the chemical balance of life-supporting soil and water. Lead, particles, sulfur dioxide, ozone, and other air pollutants have been measured in New England since the late 1960s as part of an EPA-sponsored ambient air monitoring network. Over the past decade, air quality indicators show that both emissions, and concentrations of particulate matter and sulfur dioxide have decreased. Concentrations of ozone and ozone precursor emissions, however, do not show significant reductions. More reductions are needed to help us stop long-term damage to our ecosystems, climate, and human health.

ECO-RISK

EPA inventories help identify the sources and extent of contamination of our ecosystems. Another tool for assessing the effect of contamination on ecosystems, which helps evaluate the probability of harm from contaminants, is ecological risk assessment (called "eco-risk"). To date, EPA and the New England states have used "eco-risk" extensively in waste site remediation, and this approach will have a greater role in the overall cleanup, restoration, and management of many ecosystems in the future. For example, eco-risk is being used in EPA's Waquoit Bay Case Study to develop a model for watershed protection that identifies stressors in the aquatic habitats of the watershed and assesses their impacts on aquatic species.

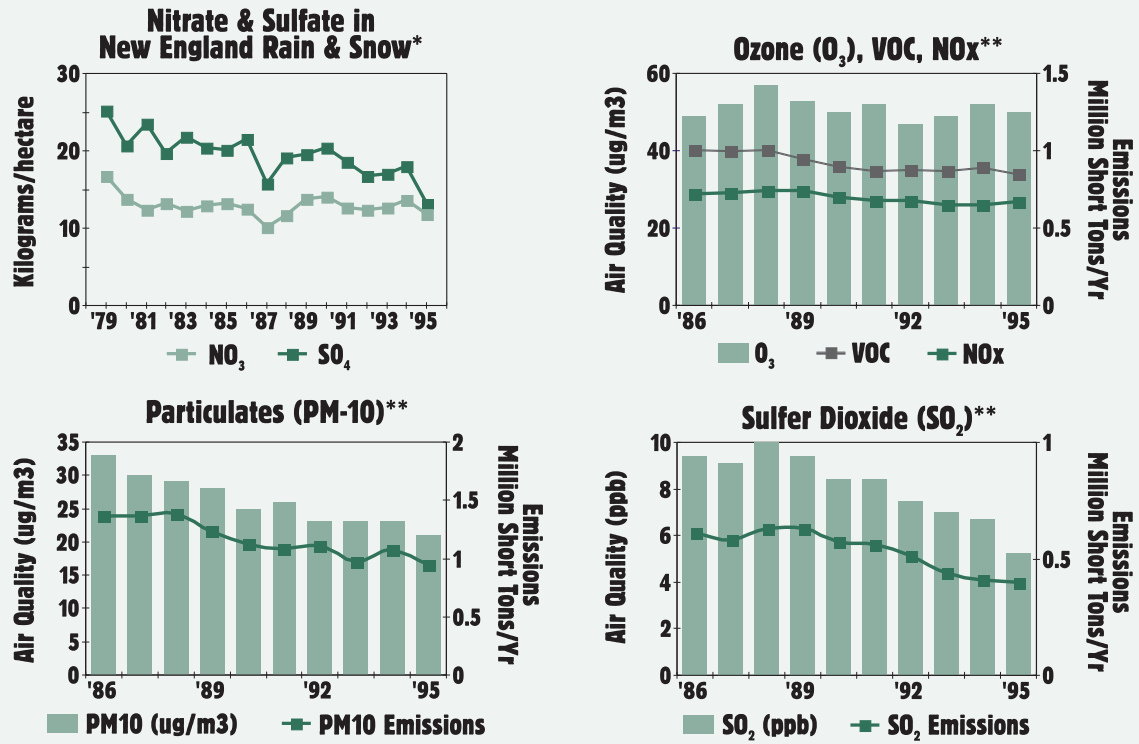
THE CUMBERLAND FARMS SETTLEMENT: PRESERVING HABITAT

Protecting wetlands requires creative vigilance from local, state, and federal agencies. One approach includes land conservation in tandem with enforcement. In 1996, a federal district court in Boston approved a civil consent decree between the United States and Cumberland Farms, Inc., resolving a long-standing action against Cumberland Farms for unpermitted filling of 180 acres of wetlands in Halifax and Hanson, Massachusetts. Under the consent decree, Cumberland is required to deed 225 undeveloped acres to the Massachusetts Division of Fisheries and Wildlife for permanent conservation. In addition, the company will establish a 30-acre wildlife and wetlands corridor on the most seriously damaged wetlands and will pay a $50,000 civil penalty.

This settlement will preserve a total of 490 acres of undeveloped habitat and represents the largest permanent preservation of habitat arising from a federal enforcement action in New England.

Ecosystems Figure 6

Air Quality in New England



*Source: National Atmospheric Deposition Program (NADP 1996) ** Air Quality data are yearly/seasonal means for selected air quality sites; Source: AIRS/NARIP

A QUIET INVASION: BIOLOGICAL NUISANCES & ALIEN SPECIES

Even though they were not originally part of our ecosystems, most of the 4,000 non-native plant species and 2,300 non-native animal species in the United States pose little threat. Those that cause damage, however, do so on a grand scale. Just seventy-nine of these species have cost the economy $97 billion to date. They alter the character of our ecosystems, place additional pressure on species that are already at risk, and adversely impact native species. Expanding global travel and trade provide still more opportunities for biological nuisances and alien invaders to reach our shores.

Eurasian watermilfoil, a submerged aquatic plant, has infested all New England states except Maine, restricting recreation, harming fisheries, and out-competing and eliminating native plants. Accidentally introduced into the United States in the 1940s, Eurasian watermilfoil has no known natural controls and can adapt to a variety of environmental conditions.

LEAD AND MERCURY CONTAMINATION IN NEW ENGLAND LOONS

Lead and mercury are two of the most prevalent toxic heavy metal compounds threatening loons. Since 1989, more than 400 dead or dying loons have been collected from freshwater and coastal areas of all six New England states. These birds died as a result of trauma, ingesting metal fishing gear, and disease. Lead fishing gear was found in over half the loons from freshwater lakes. In heavily used areas, such as Lake Winnepasaukee, more than 80% of loon deaths were related to lead poisoning from ingesting lead sinkers. Loons are very sensitive to lead poisoning and die rapidly after ingesting even small amounts of lead. Legislation in the United States has been proposed, but not enacted, to limit lead fishing gear. Alternatives to lead shot and sinkers are beginning to be marketed. Samples taken from New England loons show that mercury levels are also significantly elevated and higher than those found in loons in other regions of the United States. Fish-eating birds, such as loons and bald eagles, evidently bioaccumulate mercury because of the elevated levels in many New England lakes and rivers.

Purple loosestrife, a native of Eurasia, was first seen in North America in 1814 and has since spread to wetlands throughout the United States. It is particularly abundant in disturbed wetlands in all six New England states, crowding out native plants and threatening rare amphibians and butterflies dependent on native vegetation. Known for its bright pink flowers, purple loosestrife is still sold commercially for landscaping in some areas.

The common reed (*Phragmites*) is a tall perennial grass found in all New England states. In disturbed wetland areas associated with stormwater runoff, *Phragmites* often forms dense, single-species stands, disrupting wetland habitats and their associated wildlife. Both coastal and inland wetlands are threatened by its proliferation.

Zebra mussels are small mollusks native to Eastern Europe, first introduced to the United States in the Great Lakes in 1986. Currently, they are spreading throughout Lake Champlain and may soon reach the Connecticut River. Zebra mussels pose a threat to all New England waters and may eliminate many native freshwater mussels already under stress from pollution.

Most non-native species can never be eliminated, although their spread can be controlled. Eurasian watermilfoil and zebra mussels can be controlled by removing and properly disposing of all plant fragments and removing mussels from boats. The best control mechanism in the case of purple loosestrife and *Phragmites* is to keep wetlands intact and minimize other kinds of wetland disturbances as much as possible.

PROTECTING & RESTORING LAKE CHAMPLAIN

On November 16, 1990, Congress enacted the Lake Champlain Special Designation Act, identifying the lake as a resource of national significance and establishing a goal to bring a variety of stakeholders together to create a comprehensive plan for protecting the lake and its surrounding watershed. Home to more than 600,000 people – 180,000 of which use it for drinking water – the Lake Champlain Basin stands as a unique environmental, cultural, recreational, and economic resource that should be preserved for future generations. In 1990, the Lake Champlain Basin Program (LCBP) was established to coordinate the ecosystem and watershed-based activities envisioned in the Act. As a lead agency of the LCBP, EPA has provided more than $8 million and countless hours of technical and policy assistance in an effort to develop a pollution prevention, control, and restoration plan for the basin.

The payoff for all of this hard work came on October 28, 1996, when EPA and the states of Vermont and New York signed "Opportunities for Action: An Evolving Plan for the Future of the Lake Champlain Basin." Highlighting the need for phosphorus, toxic substance, and nuisance aquatic plant reduction strategies, the plan is now moving into the implementation phase – another step toward the long-term preservation of a precious New England resource. The Plan sets goals for phosphorus reduction throughout the lake, aiming for a 25% reduction every five years for the next twenty years.

WETLANDS

Because of their importance as habitat, their role in sustaining and restoring water quality, and their recreational values, wetlands in New England are protected by federal, state, and local laws.

New England's wetlands have been seriously impacted by human activities. Estimates of original wetland coverage and losses since the 1700s vary widely. Currently, we have approximately 11 million acres of freshwater wetlands – ranging from marshes to forested areas – and 270,000 acres of estuarine wetlands. Vermont estimates that 118 acres of freshwater wetlands have been lost and 265 acres impaired since 1990. New Hampshire estimates that up to 250 acres have been altered or lost over the last couple of years. Connecticut and Maine, however, estimate that 250 acres per year are altered or lost. Primary reasons for current wetland loss in New England are filling, draining, and dredging associated with agriculture, and urban and suburban sprawl.

EPA's New England Office is vigorously curtailing wetland loss and degradation by supporting state and local efforts to protect and restore this vital resource. In partnership with the Corps of Engineers and the states, regulations are being streamlined, becoming clearer and fairer to applicants, and getting more protective of important public resources. EPA's enforcement arsenal is also used to restore wetlands and penalize those who flagrantly violate wetland protection laws.

SEARS ISLAND: HOPE FOR THE FUTURE

For more than fifteen years, the Maine Department of Transportation (ME DOT) planned to construct a major cargo port at Sears Island, a 940-acre undeveloped island off of the coast of Maine. The project would have eliminated 12 acres of productive eelgrass beds (vitally important for several species, including lobsters, crabs, and menhaden), roughly 15 to 30 acres of valuable freshwater wetlands, and 12 acres of valuable intertidal habitat supporting high densities of softshell clams.

During 1996, two significant events occurred:

First, ME DOT suspended plans for the cargo port at Sears Island, removing the most immediate threat to its freshwater and marine environment for the foreseeable future. Proposed modernization of nearby Mack Point's existing port – an industrial Brownfields site – is in the conceptual planning stage and would involve substantially less environmental harm than one constructed at Sears Island.

Second, EPA and ME DOT settled the enforcement case arising from illegal filling of 10 acres of freshwater wetlands at the island. Under a consent decree, ME DOT will put $800,000 toward wetland restoration and land preservation projects on Sears Island and on the mainland near Penobscot Bay. ME DOT will:

- remove the fill from and restore 3.2 acres of freshwater wetlands on the island, at site of ME DOT's proposed port;
- create at least one vernal pool at the restored area;
- restore 0.75 acres of wetlands at the south/central end of the island, which were degraded when unknown persons removed the topsoil;
- acquire and restore 17 acres of degraded pasture land – resulting in the land reverting to wetland - along the Dyer River, a tributary to the Sheepscot River that is habitat for the Atlantic Salmon – a species the U. S. Fish and Wildlife Service proposes to be listed as threatened; and
- invest at least $100,000 toward the purchase of valuable wetlands along the Ducktrap River, which also acts as critical habitat for Atlantic salmon.

Furthermore, under the decree, three contractor defendants who did design and construction work on the port project will pay a $10,000 cash penalty.

PUBLIC HEALTH AND OUR ENVIRONMENT

1997

Every human has a fundamental right to an environment of quality that permits a life of dignity and well being.
–U.N. Conference on the Human Environment, 1972

John Banks, Penobscot Nation

The health of New Englanders is directly linked to the condition of our environment. From the quality of our air and the water we drink, to water quality in our lakes and rivers, to the presence and cleanup of hazardous waste, our environment is a constant influence on our lives and physical well-being.

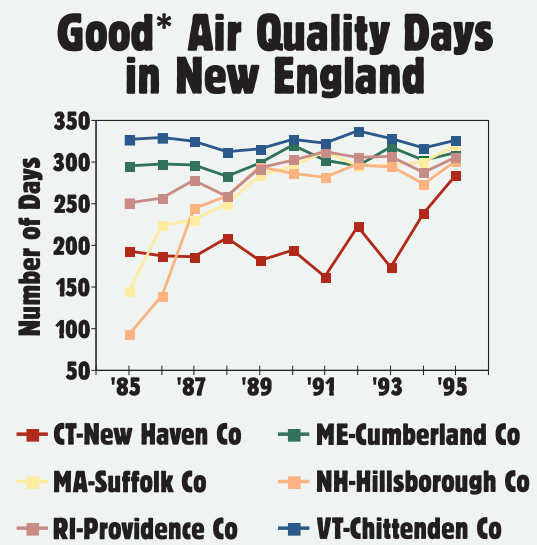
Many of the environmental indicators we present in this section show that significant progress is being made in lowering public health risks for the citizens of New England, but there is a long way to go before all environmental risk factors are brought under control. We must continue to address issues of air quality, water quality, and hazardous waste treatment if we are to leave a healthier New England environment for future generations.

GOOD NEWS ABOUT CLEAN AIR

The total number of healthy days each year – those days when all significant air pollutants are at or below 50% of the National Ambient Air Quality Standards – is an important air quality indicator. The news is very good. The number of healthy air quality days for the last ten years in six urban counties in New England shows improvements in air quality (Figure 1). If we compare today's situation to the past, we find that air quality varied greatly across the region twelve years ago – from more than 320 healthy days in Vermont to only 150 healthy days in New Haven, Connecticut. By 1995, however, there were nearly 300 healthy days in each of these urban areas.

Although we have made significant progress in our efforts to improve air quality, our work is not over; we still have days during the summer that exceed acceptable ground-level ozone standards. In addition, new research shows health effects associated with exposure to ozone and particulate matter at levels that are below current standards. These studies suggest that children playing outdoors and outdoor workers experience respiratory problems, such as asthma attacks and shortness of breath, when they are exposed to lower levels of ozone in summertime smog for six to eight hours. Studies also point to a connection between exposure to very fine particulate matter (less than 2.5 microns in diameter), aggravation of respiratory and heart disease, and premature deaths. EPA is evaluating this research and has proposed new National Ambient Air Quality Standards to address these issues.

Public Health Figure 1



*Good Air Quality is any day when all measured criteria air pollutants are 50% or less of the National Ambient Air Quality Standards

Source: EPA AIRS

Fletcher's Paint Site: Bad Dust

The Fletcher's Paint site, located in Milford, New Hampshire, manufactured paints and stains from 1948 until 1991, and was listed as a National Priority List (NPL) Superfund site in 1989. Earlier cleanup actions had included temporary gravel covers on contaminated soils, removal of almost 1,300 drums of waste, and demolition and disposal of a storage shed. Investigations undertaken between 1991 and 1994 showed PCBs as the greatest contaminant still of concern at the site. Dust samples from eight nearby homes showed that all eight were contaminated with low levels of PCBs. Working with the New Hampshire Department of Public Health Services, EPA determined that the contaminated soils presented a health risk to the residents. After several months of negotiation, EPA ordered the excavation of all PCB-contaminated soils containing more than one ppm (parts per million) PCB from the yards and driveways of these residences. The excavation took place in August 1995. Four families took part in a voluntary relocation program offered by EPA for the duration of the removal activity. A total of 780 tons of contaminated soils was removed from the properties, preventing wind-blown dust from spreading PCB contamination.

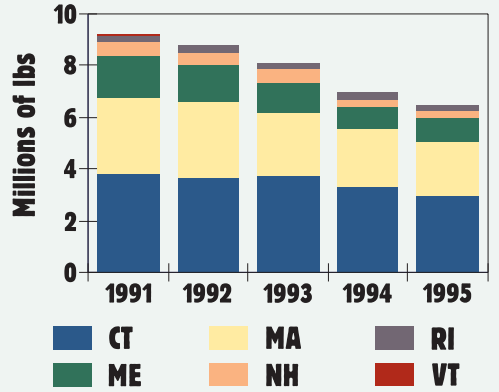
A SERIOUS CONCERN

Asthma has become a major public health problem – it is the leading cause of chronic illness in our children and is the leading cause of school absenteeism due to sickness. The number of Americans with asthma increased by 42% in the last decade and continues to rise, elevating asthma to the unfortunate status of "the environmental disease of the decade." Asthma is a disease characterized by inflammation of the airways that makes it hard to breathe. It is increasing both in prevalence and severity. The number of asthma deaths has increased by 58% in this decade. In New England, asthma is the cause in one out of every 100,000 deaths. Although this is low when compared to the rest of the nation, there is reason for concern. In Boston alone, it is estimated that more than 100,000 children are affected by asthma. One survey found an average of two asthmatic children per Boston classroom. The highest rate for asthma hospitalization is in the poorer neighborhoods of the inner city.

A host of air pollutants, such as particles, nitrogen oxides, tobacco smoke, ozone, allergens, and chemicals, aggravate asthma. Our environmental indicators show that we have reduced ambient air levels of many of these pollutants. Unfortunately, even brief or low-level exposure may be a problem, and children, minorities, and the urban population are at the greatest risk. Asthma prevention is an important element of EPA's commitment to public health and environmental justice.

Public Health Figure 2

Releases of Carcinogens* In New England 1991-1995



*Releases inlcude Air, Land, & Water
Source: EPA Toxic Release Inventory

Most New Englanders spend more than 90% of their time indoors. This means that indoor air pollutants, which can also aggravate asthma, are another concern. EPA has determined that poor indoor air quality is among the greatest health risks to the population. We are trying to help people identify and control indoor air problems. For example, exposure to secondhand tobacco smoke is an undisputed trigger for asthma in children. EPA is working with schools and community groups to distribute information about secondhand smoke and indoor air. The agency has developed a Tools for Schools Kit, which provides information about conducting home asthma evaluations and promotes a team approach to indoor air quality.

GETTING DANGEROUS CONTAMINANTS OUT OF THE ENVIRONMENT

Working in partnership with the New England states and private industry, EPA has achieved a significant reduction in the amount of cancer-causing substances (known as carcinogens) released into the air, land, and waters of New England. Taken from EPA's Toxic Release Inventory, these environmental indicators show a drop in the release of carcinogens from 9.5 tons per year in 1991 to just over 6 tons per year in 1995 (Figure 2). The New England Environmental Assistance Team, through their pollution prevention activities and outreach efforts, is focusing on four industrial sectors – printing, metal finishing, electronics, and municipalities – in our pursuit to reduce the use of toxic compounds.

CONTROL STRATEGIES FOR BENZENE: MORE GOOD NEWS

The gasoline we use in our cars is composed of a complex mixture of more than 100 organic compounds. Prior to the 1970s, gasoline contained small

Public Health Figure 3

New England Superfund Program

Total Wastes Treated Through 1996

Groundwater	6.5 billion gallons
Liquid Waste	1.2 million gallons
Surface Water	300 million gallons
Contaminated Soil & Other Solid Wastes	1 million cubic yards
Sediment	14,000 cubic yards

quantities of lead and other toxic compounds. Lead was removed from gasoline in the 1970s and no longer poses a public health threat. Many of the other toxic compounds, however, still remain. Benzene is among the most toxic of these. Research shows that people who are exposed to benzene can suffer immediate and long-term effects ranging from narcosis, nausea, and headaches, to severe blood disorders and leukemia.

The Clean Air Act Amendments passed by Congress in 1990 required gasoline refiners to produce reformulated gasoline (RFG) by January 1, 1995 that contained smaller amounts of toxic compounds such as benzene. The reformulated gas program has had a dramatic and positive effect on cleaning the air in New England. In 1995, summertime concentrations of benzene in RFG had decreased by 60% from levels only a year earlier. Additional reductions in the concentration of toxic compounds in gasoline are scheduled to take effect by 1999.

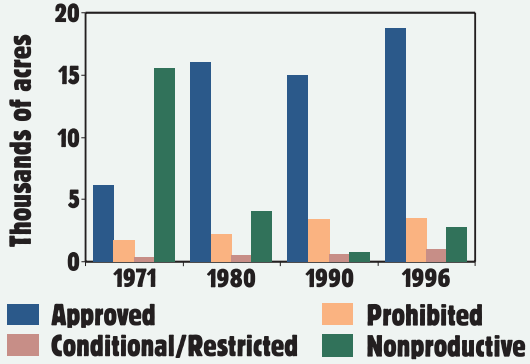
CLEANING UP THE MESS

Correcting the damage caused by decades of hazardous waste dumping is an immense task, but we have begun to make visible progress. Since 1980, EPA's New England Office has taken ninety-three immediate actions at National Priority List (NPL) Superfund sites and made 274 emergency responses at other hazardous waste sites and material spills to address imminent threats to public health. At the eighty-one Superfund sites under remediation, nineteen have met cleanup goals for land, surface, or ground water, fifteen sites have partial goals met, and forty-seven have ongoing cleanup activities.

Public Health Figure 4

Classified Shellfish Water Acreages in New England Estuaries

Total Acres Classified



Source: NOAA, State 305(b) Water Quality Inventory

Johns Manville Removal Project

From 1900 to 1985, the Johns Manville Company operated an asbestos insulation manufacturing facility in one of the oldest neighborhoods of Nashua, New Hampshire. During its operation, manufacturing wastes containing asbestos, PCBs, and other hazardous materials were stored or buried throughout two site buildings and the surrounding property. Located within a one-mile radius of the site are 13 schools, a hospital, and 13 elderly and low-income housing developments. The site was condemned by the City of Nashua in October 1994, to avoid a potential public health hazard and to prevent trespassers from entering the buildings. In response to an emergency request by the state, EPA activities at the site began in the summer of 1995, when our staff conducted a removal of more than 370 tons of asbestos-containing materials, 630 gallons of PCB oil, and 500 containers of flammable and toxic materials. Recognizing that without our help this abandoned site would remain a threat to local residents, EPA constructed a long-term strategy to clean up this site.

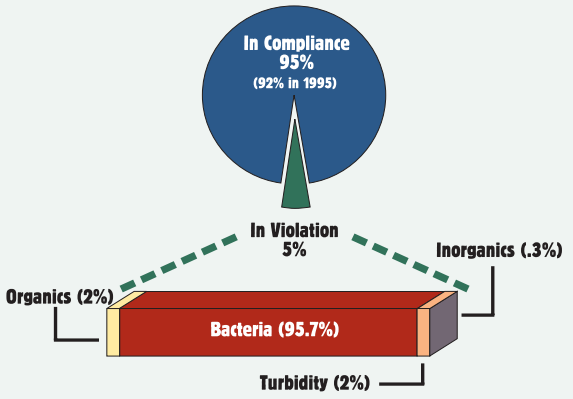
Heavy snowfall in 1996 caused several roof sections to collapse, increasing the potential for an asbestos release to the surrounding neighborhood, and creating the need for quick, concerted action. Working with local and state agencies and community groups, EPA invested $3.7 million in a major removal effort at the site. Since August 1996, EPA has removed more than 1,800 tons of asbestos-containing material and has begun the demolition of the collapsing buildings, with an ultimate goal to return this site to beneficial economic use.

Based on the amount of hazardous waste treated (Figure 3), there appears to have been a steady decrease in risks to people and ecosystems. But we still have a lot of work to do, and Superfund cleanup teams are improving their efficiency and using innovative technologies to get the job done.

Public Health Figure 5

Drinking Water Quality Improving

Percent of Water Systems in Compliance with the Safe Drinking Water Act 1996



Source: EPA Safe Drinking Water Information System, 1996

Partnerships in the Northern Oxford County Project

The Northern Oxford County Coalition (NOCC) was formed to address citizen concerns about air quality and environmental health in the towns of Rumford, Mexico, Dixfield, and Peru in northwestern Maine. Some citizens in the county were concerned about the possibility that poor air quality was contributing to elevated rates of cancer and respiratory diseases. The major business in the area is a pulp and paper mill, situated in a deep river valley in Rumford. Although existing environmental quality standards had not been exceeded, EPA became involved as a coalition partner at the communities' request in 1994, and subsequently, has played a leading role in the coalition's work. The NOCC helps citizens of Northern Oxford County make informed decisions about their environment and improve the quality of life in their communities. The coalition includes the Maine Department of Environmental Protection (DEP), the state Bureau of Health, citizens of the four towns, local governments, businesses (including the pulp and paper mill), health care providers, and EPA. A long-term air monitoring plan will be developed from data gathered during year-long monitoring of air pollutants in valley fog, and by April 1997, the NOCC will offer a series of recommendations for improving air quality and public health.

WATCHING WHAT WE EAT

Monitoring and managing shellfish flats in New England is a way to determine the health of this habitat while protecting public health. While there has been an increase in the total acreage approved for shellfish harvesting over the last twenty-five years, the number of shellfish bed acres closed for public health concerns have doubled (Figure 4). The greatest number of closed beds are near populated areas and are associated with contamination from municipal discharges, combined sewer overflows, failed septic systems, and overboard discharges from boats.

Five of the six New England states have issued statewide fish consumption advisories for the general population, with additional restrictions for subsistence fishermen and sensitive subpopulations, including children, nursing mothers, and pregnant women. Mercury has been found at levels of concern in fish everywhere in New England. In some local areas, PCBs, dioxins, and some pesticides are also a problem. To find out more about eating fish in your community, contact your local health agency.

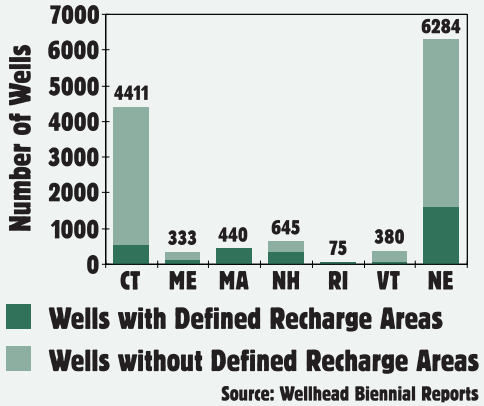
QUENCHING OUR THIRST

Safe, potable drinking water is central to a region's health and its economy. In 1996, 95% of our public drinking water systems were in compliance with all drinking water standards (Figure 5). Most of the remaining 5% were in violation because of contamination by bacteria that were subsequently found to pose no direct threat to human health. Nevertheless, water-borne bacteria, viruses, and protozoans in our water supply will continue to be of concern as we move into the next century.

Preventing pollution of the lakes, rivers, streams, and groundwater that serve as drinking water sources is critical for public safety. Here in New England, where 31% of the population is served by groundwater, all six states have approved wellhead protection programs, a good indicator of the extent of protection for community water supplies. We are making progress toward our goal to delineate (or define) the recharge area around 100% of our public wells (Figure 6). The Safe Drinking Water Act Amendments of 1996 offer additional protection through provisions for new prevention approaches, improved consumer information, improved regulations, and funding for states and local water systems. For 1997, New England has $87 million available to fund the most pressing compliance and public health protection needs.

Public Health Figure 6

Public Well Systems with Defined Recharge Areas



Source: Wellhead Biennial Reports

ECONOMIC OPPORTUNITIES

Pollution is nothing but the resources we are not harvesting. We allow them to disperse because we've been ignorant of their value.
–Buckminster Fuller

C. Franks

EPA and its partners in New England are proving that economic progress and environmental protection are not mutually exclusive and can often be mutually beneficial. As New England's economic health improves, its citizens also continue to protect and preserve their natural heritage. For example, EPA's Toxic Release Inventory reports show greater decreases in total waste generated by New England companies than in any other area of the country, which is a good indicator of the success of our pollution prevention and source reduction programs (Figure 1).

Environmental compliance is EPA's own bottom line. We use strong regulatory enforcement, combined with incentives and technical assistance, to help businesses achieve – and stay in – compliance with environmental laws. As importantly, we help New Englanders exceed environmental standards through pollution prevention, often helping them to reap significant dividends in the process.

REACHING OUT TO HELP: ASSISTANCE & POLLUTION PREVENTION

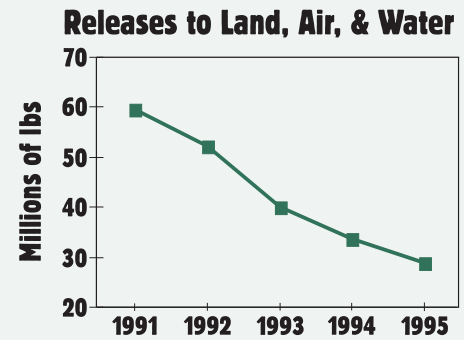
EPA's regional Assistance and Pollution Prevention team has been actively helping businesses and organizations throughout New England by responding to more than 7,000 requests for technical assistance, sponsoring more than eighty workshops and training sessions, and visiting 150 businesses and municipalities. The team has also organized innovative technology demonstration projects, developed compliance manuals, and provided nearly $1 million in grants for pollution prevention projects.

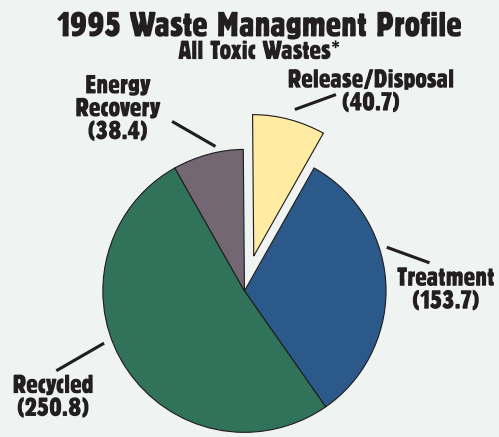
BRIGHT IDEAS

Electricity rates in New England are among the highest in the nation. EPA's Green Lights and EnergyStar programs help companies to invest in energy saving measures while reducing operating costs and enhancing their competitive position. Experience has shown that investments in energy efficiency often pay for themselves within a few years. Average rates of return can exceed 45%.

Economics Figure 1

Toxic Releases Are Declining In New England





*Wastes in millions of pounds
Source: Toxic Release Inventory, 1991-1995

GREEN LIGHTS FOR GILLETTE

The Gillette Company in Boston, a charter member of the Green Lights program, has participated in EPA's pollution prevention programs for years. Under EPA's "33/50" Program, Gillette reduced releases and off-site disposal of targeted chemical wastes by 99%. Under EPA's WasteWi$e program, Gillette has donated 12,500 pounds of materials to the Boston Schools Recycling Center and given more than 1,300 pieces of office equipment to local nonprofit organizations. Gillette was selected as a participant in EPA's national Environmental Leadership Program in 1995, and more recently, began a project to develop and test an innovative environmental compliance and auditing program, StarTrack.

Because these programs reduce demand for electricity, they also reduce emissions such as sulfur dioxide, nitrogen oxides, particulates, mercury, and carbon dioxide from power plants. From 1991 to the present, people who have participated in Green Lights in New England have kept more than 851 million pounds of carbon dioxide, 6.8 million pounds of sulfur dioxide, and 2.4 million pounds of nitrogen oxides from entering the atmosphere, while saving 773 million kilowatts of energy, which adds up to approximately $21 million per year.

Innovative EPA programs such as the StarTrack third party compliance program are examples of ways in which we are encouraging and rewarding businesses who work to exceed environmental standards. In 1996, EPA recognized twenty-one New England companies as environmental leaders; nine of these have agreed to participate in the StarTrack program. StarTrack builds on ISO 14001 – an international system of environmental management standards – to encourage businesses to scrutinize their environmental compliance and management systems, and establish plans for improving performance. StarTrack provides limited penalty amnesty, no routine inspections, simplified reporting, and expedited permitting in exchange for an agreement to obtain an independently certified assessment of the company's environmental management and compliance performance. Companies that have begun these efforts have already reaped significant environmental and economic rewards, including pollution prevention, a healthier bottom line, and a greater degree of trust and respect from the public.

In March 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Under this authority, EPA issued a Policy on Compliance Incentives for Small Businesses. Civil penalties are eliminated for businesses that satisfy policy conditions, including prompt disclosure and correction. As part of this focus, EPA's New England Office designed a pilot project for small and medium-sized metal finishing businesses in Maine and New Hampshire. The CLEAN program offers free, on-site compliance and pollution prevention audits, and enforcement amnesty for any violations discovered in the process, so long as participating companies agree to correct violations found during the audit and undertake an additional "beyond compliance" pollution prevention project. Besides expanding its regional focus, the CLEAN program will focus on printers and wood product companies in 1997. New England's Small Business Ombudsman is also available to help small businesses with compliance issues.

EPA's new Partners for Change program is based on the idea that every New England business and municipality, no matter how large or small, can do something to improve the environment and should be recognized for its efforts. Anyone can apply, and by undertaking a pollution prevention or waste reduction project such as implementing process changes, instituting physical or equipment modifications, or engaging in education and outreach, participants can receive an EPA Partners for Change window decal and "green" business benefits.

ON THE ROAD TO RECOVERY

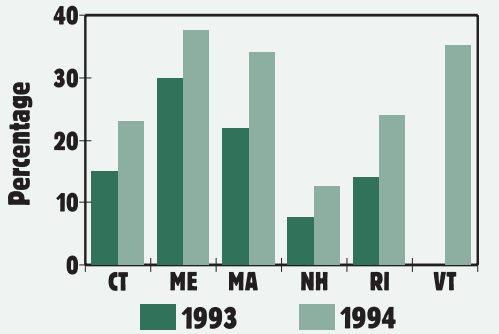
The Brownfields Initiative, part of EPA's Superfund Program, is helping to turn previously contaminated Superfund sites into environmentally healthy, economically productive areas in fourteen New England communities. One example is in a low-income elderly housing community in Bangor, Maine, where a much-needed supermarket is being built, with help from grants and partnerships with the local government, on the site of a former coal gasification plant. Private efforts have begun to acquire the property, and the City of Bangor estimates that the new supermarket will add $5.1 million to the local tax base and create 150 new jobs. Similar efforts in Connecticut and Massachusetts will put more than 250 acres of previously contaminated land back into productive use.

PEOPLE MAKING A DIFFERENCE: Chris Ford, Printed Circuit Corporation

Chris Ford is an environmental engineer handling all environmental, health, and safety issues for Printed Circuit Corporation of Woburn, Massachusetts. Chris is a strong advocate of pollution prevention and an ally of EPA's New England Environmental Assistance Team (NEEAT). A certified Toxics Use Reduction Planner, he is an instructor at the Toxics Use Reduction Institute (TURI) in Lowell, Massachusetts, has educated EPA technical staff about the electroplating industry, and has traveled as far as Mexico to teach companies about pollution prevention. At Printed Circuit Corp., Chris led a group in implementing projects that reduced the company's sulfuric acid use by 30 tons per year, reduced use of ammonia by 100,000 pounds a year, and reduced acid waste by 70% through the use of an acid recycling unit; these efforts save the company a significant amount of money every year.

Economics Figure 2

Recycling Rates In New England



Source: Waste Age

The Northbridge Risk Reduction Demonstration Project: Good News for Homeowners

In a model of government cooperation and community participation, EPA, the Massachusetts Department of Environmental Protection (DEP), and Massachusetts Department of Public Health (DPH) are working together in Northbridge, Massachusetts, to demonstrate the cost-effectiveness of "low-tech" measures for reducing environmental health risks and cleanup costs that have come to be associated with lead-contaminated soils. Six children living in a neighborhood of seven duplex homes were found to have blood lead levels that remained elevated even after their homes were de-leaded in accordance with DPH lead paint requirements. Too much lead in the body can cause serious damage to the brain, kidneys, nervous system, and red blood cells, and can affect a child's physical development and ability to learn. Soil containing residues from lead-based paint was believed to be the culprit. The contaminated soil was isolated by combining the use of pavement, synthetic cover material, and a variety of landscaping techniques. In this way, children's exposures to lead-contaminated soil and risk of further lead poisoning were cost-effectively reduced without having to excavate every yard of soil at enormous expense and inconvenience to residents. This demonstration is good news for homeowners, environmental regulators, and public health officials who are struggling to deal with similar problems around the country.

WASTE NOT

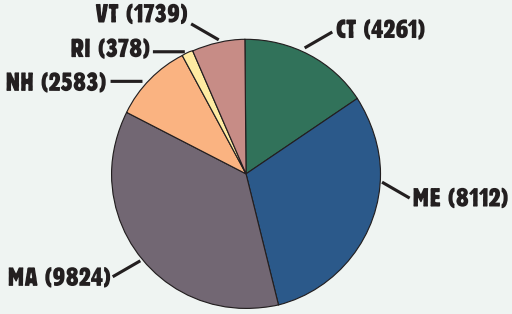
New Englanders generate 4.3 pounds of solid waste per person each day. Although the amount of solid waste generated each year has been increasing since 1960, the rate of growth has slowed recently as a result of efforts to promote source reduction, reuse, recycling, and composting. At the same time, the proportion of waste being recycled in all six New England states has been growing (Figure 2).

With funding from EPA, the Northeast Recycling Council (NERC) works to develop markets for recycled products. The recycling industry provides more than 103,000 jobs in the northeast, adding $7.2 billion to our economy (Figure 3). Through the efforts of EPA, the National Recycling Coalition, and many other New Englanders, recycled products are now publicly traded on the Chicago Board of Trade. Combined with state and local initiatives, these efforts are removing millions of tons of materials from the solid waste stream every year.

EPA's WasteWi$e program encourages participants to reduce and recycle their wastes, which often results in significant savings. For example, Hasbro, Inc., a Rhode Island-based toy maker, reduced the thickness of polypropylene bags by 12.5%, saving an estimated $10,000 in 1995, and reduced the thickness of material used in its corrugated shipping containers by 15%, saving the company approximately $400,000.

Economics Figure 3

Jobs Created by Recycling



Source: Northeast Recycling Council

GRANITE STATE PLATING GETS CLEAN

Granite State Plating (GSP) in Rochester, New Hampshire, wanted to find opportunities for pollution prevention and compliance in addition to those already in place. The New Hampshire CLEAN team is working with GSP to identify inexpensive, good housekeeping practices that supplement their operations, which had already eliminated cadmium, chrome, nickel, cyanide, and halogenated solvents from GSP's wastewater discharges. Further improvements to GSP's wastewater treatment system are expected to reduce its rinse water waste generation by 95%. This project demonstrates how industry can economically produce a quality product while meeting – and even exceeding – environmental requirements through pollution prevention practices and new technologies.

THE LAST RESORT: ENFORCEMENT

EPA's New England Office is committed to working with businesses and encouraging them to come forward with their problems and to cooperatively reach environmental standards. In cases where companies disregard important environmental regulations or gain unfair economic advantage from failing to comply with the law, however, EPA is prepared to use its enforcement authority to remedy the situation.

In 1996, EPA's New England workforce organized its inspection and enforcement resources to focus on public agencies, industrial sectors, urban environments, and sensitive ecosystems, accomplishing more than 800 inspections and 170 formal enforcement actions in the region (Figure 4).

PEOPLE MAKING A DIFFERENCE: Ihab Farag, University of NH

EPA's CLEAN/Pollution Prevention program for metal finishers would not have been possible without the assistance, dedication, and energy of Ihab Farag at the University of New Hampshire (UNH). UNH received a grant from EPA to implement a program offering free, on-site compliance and pollution prevention audits to small and medium-sized metal finishing companies. In order to market this innovative program, Ihab built on his existing partnerships with industry and the state, visiting businesses in New Hampshire and leading the audit teams that drafted agreements with companies, as well as producing "This Old Factory," a pollution prevention training video for metal finishers.

MAKING THE BEST OF IT: SUPPLEMENTAL ENVIRONMENTAL PROJECTS

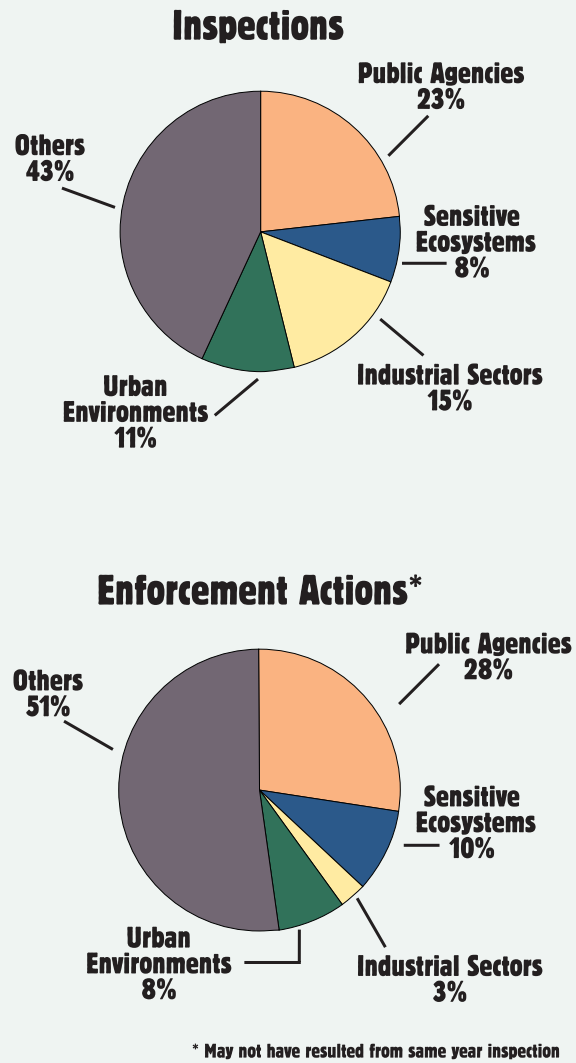
EPA's New England Office leverages its penalty powers to encourage Supplemental Environmental Projects as part of settling enforcement cases. Since 1993, we have settled more than sixty cases that included nearly $12 million in projects to benefit the New England environment. In 1996, settlements totalling $1.9 million have funded: over $1.6 in pollution prevention/reduction projects; $160,000 in environmental restoration projects; and the remainder in efforts including environmental audits, support for local emergency planning commissions, and public outreach.

Examples of Supplemental Environmental Projects:

- In settling an EPA action against Goodyear Tire and Rubber Company for violations of the stratospheric ozone protection laws, the company has made a commitment to invest more than $700,000 in a company-wide recycling program for automobile antifreeze. Under this agreement, Goodyear will purchase automotive antifreeze recycling machines to use at 568 Goodyear stores nationwide. The new equipment will clean and recycle antifreeze removed from cars during servicing. The antifreeze can then be put back into cars and reused, saving resources and protecting our environment.
- Monsanto Chemical Company has more than met requirements in its settlement with EPA for violations of the Resource Conservation and Recovery Act. Through a $150,000 study on how to reduce generation of waste, 3.5 million pounds of methanol-rich distillate has been totally eliminated from its waste stream, and 1.15 million pounds of formaldehyde and 647 pounds of sodium hydroxide are removed annually. As a result, Monsanto was able to shut down its on-site furnace and reduce operating costs.

Economics Figure 4

EPA Inspections & Enforcement Actions
Fiscal Year 1996



RECREATIONAL RESOURCES 1997

There are no larger fields,
No worthier games
than may here be played.
–Henry David Thoreau

Amelia Katzen

New England's environment offers us a myriad of recreational opportunities. From Cape Cod's sandy beaches and the breathtaking sightings of migrating whales in the Gulf of Maine, to meandering trails and snow-crusted mountain peaks, New England's network of parks and refuges gives visitors a chance to see hundreds of unique plant and wildlife communities (Figure 1).

New England attracts tourists – from all over the country and world – who spend $18 billion in the region every year. More than 400,000 jobs in New England are supported by travel and tourism, and tax revenues from regional tourism total almost $2.4 billion annually. Although these industries significantly impact the region's natural environment, they are themselves dependent on its quality.

Enjoying the outdoors has always been an integral part of New England's culture, and many of our outdoor activities help promote and protect the region's natural ecosystems. However, providing for all types of recreational activities while protecting our valuable resources requires careful collaboration and cooperation among citizens, government agencies, and businesses. Our challenge is to work together to minimize or eliminate the damage our recreational activities cause to ecosystems, and the plant and animal habitats they contain. Growing public interest in recreational activities that do not damage the environment is a promising sign that many of our activities can evolve to coexist with preservation of our ecosystems.

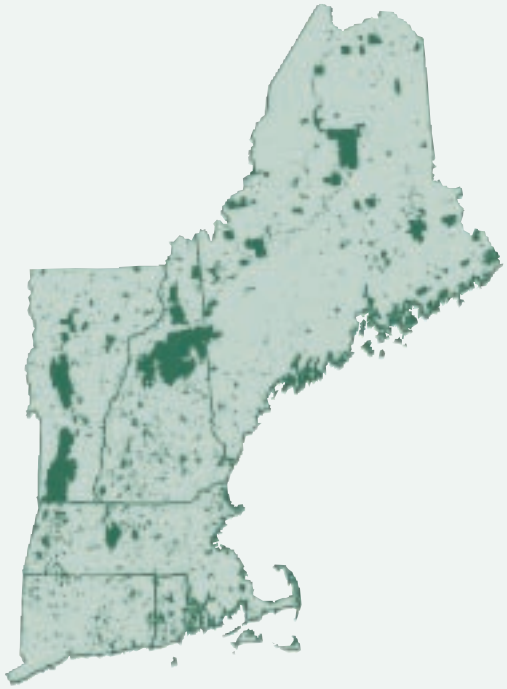
IN THE SWIM

From the rocky coastal areas of northern New England to the gently sloping beaches of Cape Cod, New England's 7,586-mile shoreline and its many lakes are playgrounds for swimmers during hot summer months. Second only to walking, swimming is the most popular recreational activity in the nation. One of the goals of the Clean Water Act is to ensure that all of our waters are safe for swimming. To date, 93% of New England's coastal waters fully support swimming, as do 84% of our lakes and 97% of our

Recreation Figure 1

Protected Areas in New England

Park, Conservation, Wildlife, & Recreational Lands



Source: State GIS data

A WIN FOR THE NASHUA RIVER WATERSHED

As part of a settlement arising from Clean Water Act violations, EPA directed CPF, Inc. to implement a Supplemental Environmental Project in 1996 that included provisions to improve conditions and provide for recreational enjoyment of water resources in the Nashua River Watershed. CPF was required to: 1) purchase land on the Nashua River that will be managed by the Massachusetts Division of Fisheries and Wildlife for water quality protection, habitat, and recreational purposes; 2) fund the Nashua River Watershed Association (NRWA) in the use of natural materials and plantings to rehabilitate a crumbling river bank wall causing an erosion problem in the Squannacook River – a prime trout fishery and canoeing river and a tributary to the Nashua River; and 3) fund a sewer stenciling project that will prevent the dumping of pollutants into storm drains, to be carried out by high school students in each community.

river miles. Nevertheless, there is a lot of work to do before we meet our goal of no beach closures and 100% swimmable waters.

In 1996, there were more than 130 beach closures in New England, forty more closures than the previous summer. This increase is primarily the result of substantial rainfall and subsequent stormwater runoff from the summer of 1995, as well as a greater monitoring effort. Stormwater runoff, failed septic systems, and combined sewer overflows lead to bacterial contamination, which is the primary pollutant affecting the "swimmability" of our waters.

EPA is working with states and local communities to locate and upgrade septic systems, and to eliminate combined sewer overflow systems in many parts of New England. At the same time, agricultural communities are implementing controls to eliminate bacterial pollution from their livestock.

BOATING COUNTRY

Normally, about 98% of our river miles and 86% of our lakes support some type of recreational boating in the form of canoeing, rafting, sailing, or power boating. Nationally, about 300 million boating trips are made every year, with more than half of these involving power boats. Boat sales are estimated to be more than $14 billion a year, and more than 6,000 companies are involved in manufacturing boats, trailers, motors, and boating accessories.

One of the ways in which EPA, the states, and our partners in coastal areas have been working to minimize the impact of boating on water quality in New England is through boat pump-out stations. The Clean Vessel Act of 1992 authorized a five-year competitive grant program for states to construct or renovate pump-out and dump stations for disposal of recreational vessel sewage. The grant program is now in its final year and all six New England states have taken advantage of the program. To date, about 190 pump-out facilities are available to the public.

TRAILS AND PATHS AND TRACKS

With our growing interest in biking, running, walking, and in-line skating, we increasingly look for scenic enjoyment and a safe haven from automotive traffic, particularly in more developed areas. Trails provide an outdoor recreational resource for both urban and rural residents alike, and an increasing number of people are using trails for a multitude of activities, including cross-country skiing, hiking, and snowmobiling (Figure 2).

To date, there are more than 16,000 miles of trails in New England; 44% of these are public, with another 5% in protected private ownership. Two-thirds of our trails are in good condition, requiring only annual maintenance. Upkeep of these trails is the result of hard work by individual volunteers and volunteer organizations who collectively maintain 81% of the trails in New England.

One example of EPA's support of recreation in New England is the Urban Environmental Initiative in Providence, Rhode Island, which is planning to create a greenway and bikepath along 4.4 miles of the Woonasquatucket River. EPA has created a map that identifies the location of wetlands along the river. This information will reduce greenway and bikepath planning and engineering costs, and will be used by schools to adopt wetlands and create river outreach materials, protecting the river while increasing recreational opportunities.

FISH AND FISHING

With an abundance of streams and lakes providing habit for a diversity of warm and cold water fish species, New England states issue approximately one million freshwater fishing licenses each year. Recreational marine fishing is also popular, with almost

Recreation Figure 2

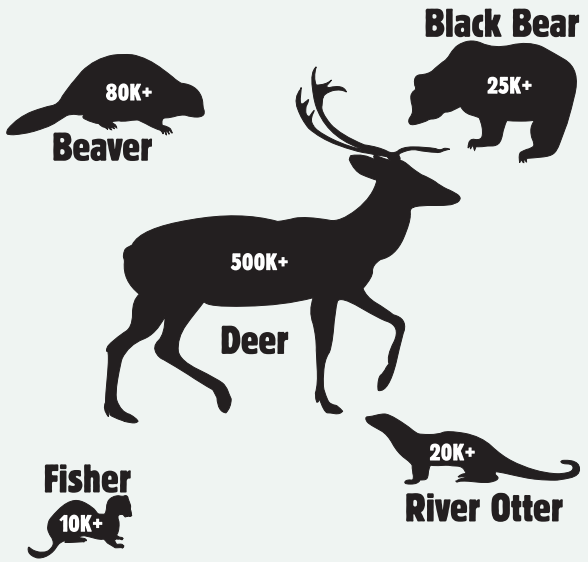
An Abundance of Trails in New England

Totals Include Overlapping Miles

Source: U.S. Department of Interior, National Survey of Fishing, Hunting & Wildlife Associated Recreation, 1991

Recreation Figure 3

New England Mammal Population is Increasing



Source: State Fish and Wildlife Departments

800,000 fishing opportunities through which 22 million pounds of fish are caught each year. By comparison, the commercial catch in the region totals approximately 560 million pounds per year.

Part of EPA's work is to recover degraded environmental resources and promote the public's enjoyment of improved areas. As of 1996, 93% of our river miles, 81% of our lake acreage, and 81% of our estuaries were available for recreational fishing. Unfortunately, fish advisories and shellfish bed closures limit consumption, as discussed in the Public Health section of this report.

An example of EPA's role in fish habitat restoration is the Central Artery/Third Harbor Tunnel Project, in which the Commonwealth of Massachusetts proposed to expand Spectacle Island in Boston Harbor by filling 110 acres of marine habitat. EPA opposed the magnitude of the initial plan, and an agreement was reached for a 12-acre expansion with an aquatic habitat mitigation that includes construction of an artificial reef near Spectacle Island Park. The reef complex will consist of a number of smaller cobble, rock, and prefabricated structures, and will cover 88,000 square feet, providing high-quality lobster and fish habitat. It can also be easily used by recreational fishermen from Boston Harbor's Long Island shore and small boats.

EPA is funding the Salmon River Bank Stabilization Demonstration Project in Connecticut, which is utilizing structural and bioengineering techniques to stabilize approximately 200 feet of eroded stream bank in order to reduce sedimentation. The Salmon River is one of the key rivers in the multi-agency Atlantic salmon restoration program. The project also includes a series of interpretive signs to educate anglers and other visitors about the importance of maintaining vegetation along river and stream banks to protect vital spawning habitat for salmon and other fish.

THE KILLINGTON SKI AREA

The Killington ski area in Vermont has been working to find environmentally acceptable sources of water to make snow. Diverse groups with conflicting interests were involved in the process that led to a Memorandum of Agreement (MOA) signed by Killington and State of Vermont Agency of Natural Resources (VTANR) in July 1996. Killington has offered to give the state nearly 3,000 acres of prime bear habitat in exchange for about 1,000 acres of adjacent state land that contains no sensitive habitats or unique environmental values, and on which it can expand its ski resort. The agreement also provides a source of water for making snow from Woodward Reservoir, which is owned and managed by the Farm and Wilderness Foundation. The reservoir will allow Killington to restore and maintain winter flows sufficient for aquatic life in its current water withdrawal sources: the Falls River, Roaring Brook, and the Ottauquechee River.

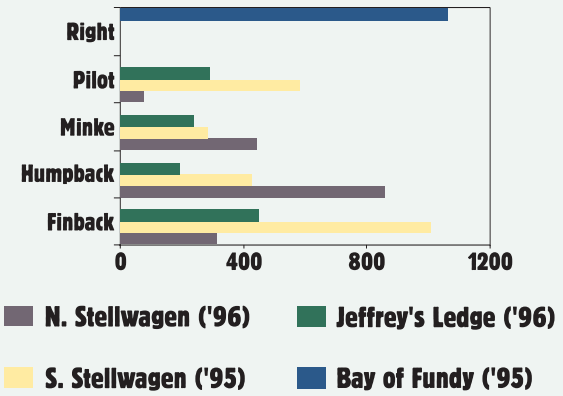
CANDID CAMERAS

More than 4 million people in New England enjoy observing and photographing birds and other wildlife. In partnership with state and local organizations, EPA's Resource Protection Projects, discussed in the New England Ecosystems section, identify relatively undisturbed areas with sensitive and valuable ecological resources for protection. Many of our large mammals are increasing in population (Figure 3). New England's diverse environments also provide abundant areas to observe breeding, migrating, and overwintering bird communities. Birdwatching is a growing activity in New England and across the country. In the past five years, membership in the American Birding Association has nearly tripled, while New England has more birders and bird clubs in proportion to total population than anywhere else in the United States.

Many areas of New England have seen a decline in neotropical migratory species as a group. Neotropicals include warblers, tanagers, flycatchers, thrushes, and other species that breed in temperate zones and winter in the tropics. While the causes of these declines are numerous and complex, two major factors are the fragmentation of once-extensive forests and the loss of important wetland habitats due to development. Grassland species, which depend on extensive unmown fields, have declined drastically in recent decades, due to loss of grassland habitat and early mowing of remaining grasslands, which destroys nests before the young have fledged. Urban birds, on the other hand, are thriving, particularly in developed areas of New England; this group contains the fewest and the most generalized species, however.

Recreation Figure 4

Whale Sightings Off New England Shores



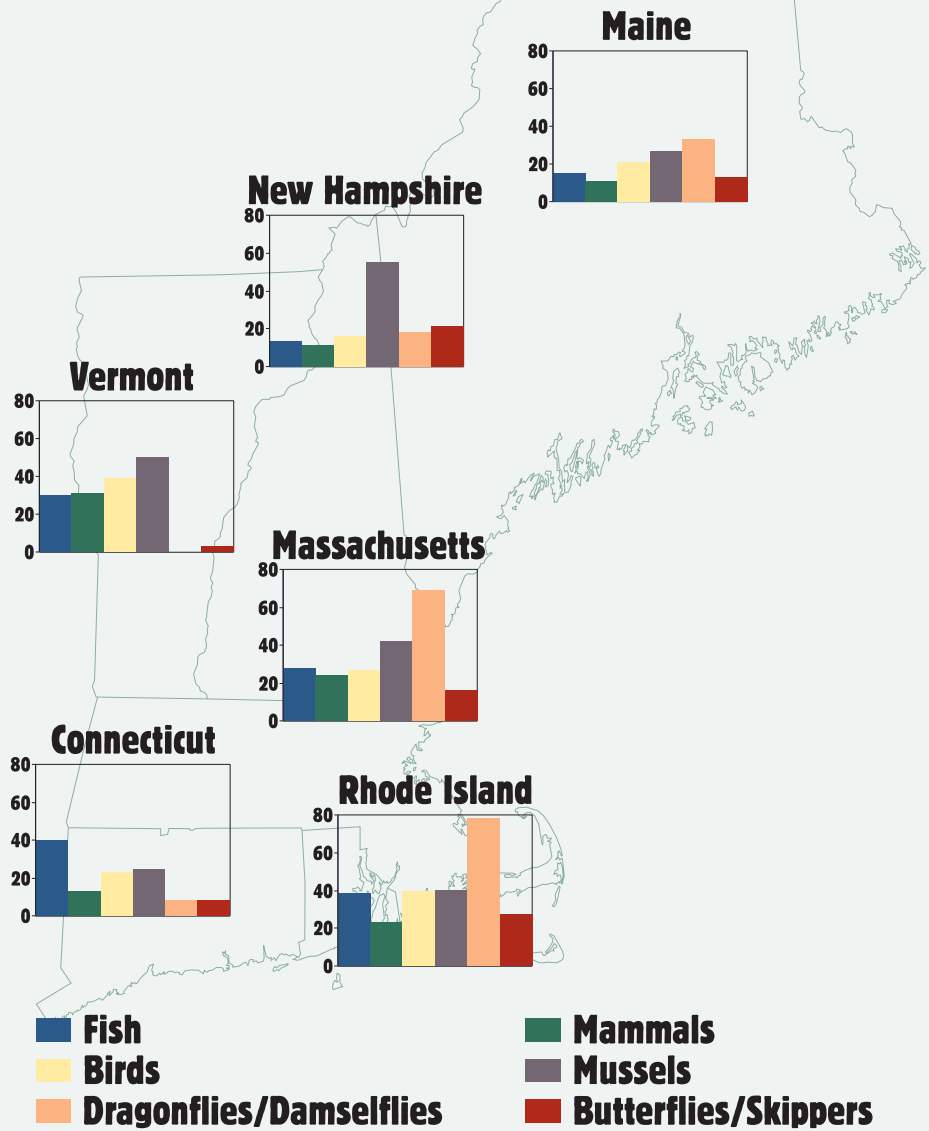
Source: Center for Coastal Studies, Center for Oceanic Research & Education, and New England Aquarium

New England's economic and cultural history is intimately connected with the whales that migrate every year just off our shores. Now protected from hunting pressures that once decimated whale populations, they are among the marine mammals that have most fascinated and inspired people throughout history.

The World Wildlife Fund recently designated Cape Cod as the best whale watching location in North America and one of the five best locations in the world. Our whales spend their summers off the New England coasts and migrate south in the winter, to breed in the waters off the southern coast of South America. Numbers and species of whales have fluctuated in response to environmental stresses, food supplies, and population dynamics (Figure 4). EPA is currently funding investigations, as part of a research effort to understand changes in whale populations, about the effects of contaminants on whales.

Percent of Species at Risk in New England

Many native species are endangered due to contaminants, loss of suitable habitat, or competition from alien species.



Source: The Nature Conservancy, 1996

ENVIRONMENTAL EDUCATION & OUTREACH 1997

In the end, we conserve only what we love.
We will love only what we understand.
We will understand only what we are taught.
–Baba Dioum

U.S. EPA Poem & Poster Contest Entry

The environmental education community is sometimes accused of indoctrinating people with simple slogans like "hug-a-tree" or "save the whales." In reality, environmental issues are often so complex, involving scientific, economic, and social factors, that no one can arbitrarily dictate the right or wrong action to take when faced with decisions that affect the environment.

At EPA, we work to help citizens – from youth educators to plant managers in large corporations – increase their environmental knowledge and improve their ability to make decisions that protect the environment and public health, while also considering economic factors. Environmental education goes beyond imparting information; it enhances the critical-thinking, problem-solving, and decision-making skills needed to make responsible environmental choices.

WE'RE ALL IN THIS TOGETHER

Traditionally, EPA has been a regulatory agency, but we understand that regulations cannot be implemented without educating the community about the need for them and providing local communities with technical assistance. We offer assistance to all who request it, whether a high school science teacher or an electroplating manufacturer. During 1996, of our nearly 800 regional employees, more than 100 were involved in voluntary outreach efforts, participating in hundreds of workshops, conferences, exhibits, technical assistance consultations, and classes.

The National Environmental Education Act of 1990 officially charged EPA with educating the public. This Act specifically appropriates funds for EPA to give small grants to schools, nonprofit organizations, and state, local, and tribal agencies for projects that inform a wide variety of audiences about the environment. Last year, EPA's New England Office received more than 150 proposals for grants, and twenty-three organizations were awarded a total of $167,474 (Figure 1).

Recognizing that local actions are critical to environmental protection, EPA's New England Office

Education Figure 1

Education, Empowerment, and Technical Assistance Grants Awarded by EPA'S New England Office in 1996

Name of Program	Total $$ Awarded	# Grants Awarded
Environmental Education	$167,474	23
Environmental Justice	$354,377	19
Urban Environmental Initiative (UEI)	$595,212	16
Technical Assistance Grants (TAG)	$150,000	3
Pollution Prevention Technical Assistance	$1,173,761	26

WETLAND TEACHERS

Hands-on experience with wetlands is a perfect way to get students to understand, appreciate, and support the protection of these essential and complex natural habitats. For this reason, EPA's New England Office has developed Wetlands Teacher Training Workshops for school teachers in grades five through twelve. Training sessions are held in the field to increase teachers' knowledge of wetlands ecology and provide them with classroom and outdoor activities for their students. Teachers that attend these workshops also receive a complimentary copy of EPA's New England wetlands curriculum and video packet, *A World In Our Backyard: A Wetlands Education and Stewardship Program.* In 1996, fifteen wetlands workshops were conducted for more than 350 teachers in the region.

encourages projects that are relevant to the local community. An example is a public school project in Lowell, Massachusetts, "The Merrimack River: Our Ecological and Industrial Lifeline," in which students examine the water quality of an urban river and share that data and historical research with other students via the Internet. We hope to continue funding similar projects in the years ahead.

EPA's New England Office also supports community education and empowerment projects through other programs such as the Urban Environmental Initiative (UEI). For example, UEI entered into a cooperative agreement with ONE/CHANE, Inc., a group in Hartford, Connecticut, to fund a Community Environmental Organizer. This person provides leadership and training to residents of North Hartford, helping them to participate in environmental decisions affecting their health and welfare. ONE/CHANE also provided a challenging environmental education program for North Hartford youth, ages fourteen to twenty-one, during the summer of 1996. Participants learned about their environment, gained computer and mapping skills, engaged in cleanup and beautification projects on Main Street and in vacant lots, and informed community members about their activities.

In 1996, EPA's New England Office and its state partners sponsored more than fifty open houses or public meetings in communities surrounding hazardous waste sites. These meetings improve communication with the public, helping people understand the Superfund site assessment and cleanup process and the potential risks associated with these sites. Meetings are well-publicized and include property owners, local officials, businesses, and citizens concerned about potential threats to the health, environment, and economy of their communities. EPA also offers funding to citizen groups affected by Superfund sites through the Technical Assistance Grants (TAG) program. To date, thirty-one of the ninety-four communities affected by New England's current Superfund sites have received TAG grants.

TEAMWORK THAT WORKS

At the same time EPA and our environmental education partners are interacting with the public, we are educating business leaders and decision-makers about doing business in a more environmentally-friendly way. EPA's New England Office, working with state and local agencies, has become a leader in providing pollution prevention and compliance assistance training to the regulated community. Much of this work is accomplished through EPA's New England Environmental Assistance Team (NEEATeam).

The NEEATeams's recent work in developing a comprehensive outreach project for Printing Industries of New England (PINE) is one example of a pollution prevention and regulation compliance success story. Through a grant to the Massachusetts Department of Environmental Protection, EPA's New England Office and PINE have worked closely

VOLUNTEER MONITORING: GETTING INVOLVED, GETTING RESULTS

Volunteer monitoring groups help educate local communities about environmental issues, serve as active stewards of the environment, help state, and local agencies target pollution problems, and provide high quality information that agencies can use. Approximately 20,000 people participate in more than 200 volunteer monitoring programs in New England, ranging from small groups of individuals working on local sites to statewide organizations sponsored by universities and state agencies.

Data generated by volunteers are used by local, state and federal agencies to assess environmental conditions and make appropriate decisions. For example, volunteers in Maine and Massachusetts have collected data that enabled closed shellfish beds to be reclassified as "open" or "conditionally open."

In Rhode Island, volunteers helped to expose pollution problems and worked with agencies to develop solutions in the Blackstone River and Runnins River areas. EPA's New England Office works with these volunteer monitoring groups in a variety of ways: participating in technical workshops; funding projects through the National Estuary Program, education, and non-point source grants; and working with groups on environmental planning and management issues in specific areas such as Casco, Narragansett and Massachusetts bays.

together to develop and implement several outreach and educational programs for printers throughout the region. On-site pollution prevention and compliance assistance visits were made by PINE at seventy-four print shops in the Boston area. Through these programs, printers have learned about proper waste management and pollution prevention.

Rhode Island recently passed regulations requiring auto body shops to use a new type of spray gun which reduces the amount of solvent used in paint and dramatically cuts the amount of volatile organic compound (VOC) emissions released into the atmosphere. EPA provided a grant to the Rhode Island Department of Environmental Management, for work with the Davies Career and Technical High School in Lincoln, Rhode Island, to train thousands of auto body workers to use this new high-tech spray equipment. The owner of one auto body repair business claims that, because less solvent was used, the cost of purchasing the $500 to $600 spray guns for each of his employees paid for itself within three weeks. (See the Economic Opportunities section for more examples of the link between good business and good environmental practices.)

Municipalities also have an important role in protecting the environmental health and safety of our citizens. EPA, in collaboration with the National Oceanographic and Atmospheric Administration (NOAA), developed Computer-Aided Management of Emergency Operations (CAMEO) software that stores numerous databases, and automates emergency planning and compliance tasks for Local Emergency Planning Committees and other emergency preparedness agencies. CAMEO provides fast answers for anyone who needs to respond to environmental or health-related emergencies. In Maine, chemical and census data stored in CAMEO was used to help determine whether to evacuate areas around a compressed gas facility that had caught fire and burned out of control for several hours. EPA has an ongoing Train-the-Trainer program to help people use CAMEO, and in 1996 alone, trained approximately 300 individuals in the United States, Canada, and other countries.

Municipal employees are taking the initiative to educate businesses in their communities about opportunities in environmental protection. One individual who exemplifies municipal initiative is Todd Dresser, a public employee at the Board of Health in Burlington, Massachusetts. He saw a need for local businesses to become familiar with the technical assistance available to them from a variety of sources. He surveyed local businesses to find out what they most wanted to learn. The first session, "Meet the Regulators," was held in the spring of 1996 at the local library and was sponsored by the area's Chamber of Commerce. The session was so successful that EPA is working with other municipalities throughout eastern Massachusetts to offer similar workshops on topics of interest to local businesses.

EPA has also become involved in a national project to address the quality of environmental education efforts, headed by the North American Alliance for Environmental Education (NAAEE). The project will develop guidelines for designing comprehensive and effective environmental education programs and materials. EPA is also working with NAAEE and others to collect and disseminate information about high-quality environmental education projects and materials.

The energy and commitment of New England's many environmental volunteers, and the willingness of businesses in the region to learn about and implement sound, cost-effective environmental practices, gives us an excellent opportunity to continue to teach one another about the importance of protecting our environment. Working together, we can understand how much we have to gain from environmental stewardship and put that understanding to work.

THE CITY YEAR ENVIRONMENTAL TEAM

Thirteen members of Boston City Year's Environmental Team, with the sponsorship of EPA's Urban Environmental Initiative, planned a multifaceted environmental education curriculum, community partnership, and community service program to run from September 1996 through June 1997. Partners include Boston Edison, Earthworm Recycling, Rockport Transfer Station Recycling Facility, South End Neighborhood Health Center, Inquilinos Boricuas en Accion, and the Massachusetts Executive Office of Communities and Development.

The partners trained City Year Team members to be environmental leaders and teachers of energy, recycling, indoor environments, and related environmental health concerns. The City Year Team assists the Massachusetts Department of Energy in conducting energy audits to determine heat loss, testing for carbon monoxide emissions, and insulating homes. Team members also teach children about the environment in after school programs and have organized two environmental health fairs in Boston's South End, where they distributed energy-efficient light bulbs donated by Boston Edison. The City Year Team also makes indoor air quality/asthma home assessments in Roxbury, meeting with families to complete questionnaires, conducting walk-throughs to identify asthma triggers, collecting samples of dust for lead testing, conducting carbon monoxide tests, and distributing free carbon monoxide detectors and allergy-controlled mattress and pillow covers for asthma patients.

NEW DIRECTIONS

1997

It is common sense to take a method and try it. If it fails, admit it frankly and try another. But above all, try something.

–Franklin Delano Roosevelt

Pat Hamlin

Over the past three decades, New England has witnessed tremendous progress in the protection, preservation, and restoration of our environment. This progress has generated substantial benefits – fresher air to breathe, cleaner water to drink, and safer places to live, work, and play – for us, the inhabitants of this region, and for our children. Much of this credit goes to EPA's partners, those New England citizens, businesses, and government organizations that recognize the critical importance of a healthy environment, without whose help EPA would not have been able to protect the environment as effectively as we do now.

Our work is not yet done, however. We still need to tackle the remaining sources of pollution in New England that are difficult to measure and track – atmospheric deposition, for example – and those which are persistent or difficult to treat – such as heavy metals or nutrients. We should still work to forge new partnerships with industries and develop new strategies for meeting – and exceeding – environmental goals. We must continue to change our organization into one more responsive to and reflective of the environment we protect. As we progress on these fronts, we will focus on measuring and tracking the effects of these actions on the environment, and will communicate these results to you clearly and succinctly.

PROGRESS, NOT PROCESS

In continuing with the cultural and organizational change that is taking place in our New England Office, EPA is working to become a truly performance-based organization, concentrating less on process-oriented activities and more on specific goals – measuring our success based on the achievement of these goals. One tool that will allow us to do this is the newly implemented RESULTS, a comprehensive system utilized for planning and tracking regional goals and accomplishments. Another part of this effort is to introduce a major training program for our employees to teach them new skills – how to build partnerships, work with communities, and provide pollution prevention assistance.

NEW APPROACHES: BUILDING ON A FOUNDATION

Over the past three years, EPA's New England Office has introduced a number of new initiatives intended to change the face of environmental protection. Our overall challenge now is to build on and broaden these successful innovations and turn small, promising initiatives into large, ongoing activities that will be more fully integrated into our work.

The CLEAN program is designed to help small businesses – primarily metal finishers in Maine and New Hampshire – employ responsible environmental practices. In the next year, we will be expanding this program to three additional small business sectors – printers, wood product companies, and auto body shops – in all of the New England states.

Our NEEATeam has been assembled to complement EPA's traditional command-and-control role with a more accessible, flexible assistance presence, and to listen to and address the regulated community's questions and concerns. We will continue to expand the NEEATeam's activities beyond its current focus of four sectors – printing, metal finishing, electronics, and municipalities – into new areas, including auto repair, wood coaters , and vocational/ technical schools.

EPA's Center for Environmental Industry and Technology (CEIT) is designed to promote the New England environmental technology industry – a sector that contributes $10 billion a year and 150,000 jobs to New England's economy. The upcoming year will see an expansion of CEIT's role into activities involving verification of innovative environmental technology, streamlining of technology permitting processes, and involvement of innovative technology in Supplemental Environmental Projects.

EPA's New England Office will also continue to emphasize that pollution prevention is good for the environment, as well as good for the economy, and will develop the environmental and economic indicators to prove it. One example of this effort, EPA's regional "Getting the GreenBack" campaign, brings together New England assistance and recognition programs, along with success stories about companies that have implemented these programs, to help show businesses that pollution prevention is the best way to achieve environmental compliance.

BECOMING PARTNERS IN ENVIRONMENTAL PROTECTION

Our office's recent reorganization enables us to become a truly performance-based organization, concentrating on specific goals and forming new partnerships with states, tribes, businesses, and individual citizens. An excellent example of this partnering can be found in the recently formed Performance Partnership Agreements between EPA's New England Office and all of the New England states. This new approach streamlines numerous grant programs into one agreement that allows states flexibility to address their most serious environmental problems through mechanisms best suited to the tasks. From now on, EPA and the states will have integrated work plans that jointly define environmental goals and measurable indicators of success.

A major tool in the successful implementation of Performance Partnership Agreements is the New England Goals and Indicators Project, a collaboration between EPA, the New England states, and other partners to develop a consistent set of environmental goals and indicators. Thanks to the efforts of this project, we will be able to gauge our progress in meeting public health and environmental goals through a series of mutually agreed-upon measures. The first of these indicators – included in this report – provide a solid foundation upon which to build.

A primary focus of future EPA partnering efforts is a continuing commitment to community-based environmental protection. In finalizing comprehensive conservation and management plans for the Lake Champlain, Massachusetts Bay, and Casco Bay watersheds, we recognized that the success of these plans will depend on a combination of local, state, and federal efforts. We will continue to assist communities in developing groundwater and watershed protection programs that reflect local conditions, and in addition, will expand our Urban Environmental Initiatives program to help inner-city communities protect the environment while promoting economic development.

A significant portion of the Urban Environmental Initiative effort is the Brownfields Initiative, designed to remove the regulatory barriers that impede the economic redevelopment of contaminated property, facilitate the cleanup of such property, and return the property to productive use. Fourteen New England communities now have Brownfields Pilot Projects underway, with more expected to begin within the next year. We also plan to quantify the economic advantages of EPA's Brownfields activities in New England and will measure how key economic indicators (such as creation of jobs and state/local tax revenues) are affected by these activities.

BETTER TARGETING OUR RESOURCES

As part of our Strong Targeted Enforcement Program (STEP-UP), we are now targeting our enforcement resources toward areas with the highest environmental and human health risk, or where there is the greatest likelihood of significant violations – areas such as urban and sensitive ecosystems, public agencies, and specific industrial sectors – to achieve the greatest compliance levels. We anticipate greater integration and alignment of functions within our office to make these programs even more effective. In the future, we will be significantly increasing our presence in the regulated community and initiating more enforcement actions where most needed.

CONCLUSION

The most valuable resources in New England are the people in local communities, businesses, schools, and other organizations who see an environmental problem, devote time and energy to solving it, and in the process, discover creative approaches to environmental protection. The hard work of some of these individuals has been highlighted throughout this report, but it is important to remember that there are many, many more people out there who quietly strive to restore and improve the environment with little fanfare or recognition. To those individuals, we at EPA's New England Office sincerely thank you for your effort.

Successful environmental protection requires the cooperation of people across society – citizens, businesses, academics – all joining hands with public officials to make government work. As we work together, may our labor chart a healthy and sustainable future, not only for our generation, but for those to follow.

IMPORTANT TOLL-FREE TELEPHONE NUMBERS

Customer Assistance Line: (888) EPA-REG1 (888-372-7341)
Enforcement Tips and Complaints: (888) EPA-TIPS (888-372-8477)
Emergency Response (for reporting spills/environmental incidents): (800) 424-8802
The NEEATeam (technical assistance): (800) 90NEEAT (800-906-3328)
Center for Environmental Industry and Technology: (800) 575-CEIT (800-575-2348)

And don't forget to check out our Web Site: http://www.epa.gov/region01

The 1997 State of the New England Environment is published by:

The Environmental Protection Agency
New England Office
John F. Kennedy Building
Boston, MA 02203
617-565-2713

Project Managers
Diane Switzer & Carol Wood

Graphics Design & Layout
Heather Surface, *MTI*

GIS Support
Michael Charpentier, *Signal Corporation*

Editing
Tatiana Brailovskaya, *Nereus Communications Inc.*

Policy Coordinator
Michael O'Malley

Cover Photo Credits
From left to right: Amelia Katzen, Lisa Hastings, C. Franks, and Edward Reiner; all other photo credits as indicated

All data is from EPA or individual New England states unless otherwise noted.

This report was printed with vegetable based inks on recycled and recyclable paper.

Special thanks to the following: Northeast Recycling Council; The Nature Conservancy; Dr. Mark Pokras, Tufts University School of Veterinary Medicine; Mick Cooper, Sheffield Hallam University, England; Killington Ski Resort; National Audubon Society; Massachusetts Audubon Society; New Hampshire Audubon Society; American Birding Association; Cetacean Research Unit; Center for Coastal Studies; College of the Atlantic; Southwick Associates; Discover New England; Paul Kerlinger; Whale Conservation Institute; New England Whale Watch; Center for Oceanic Research; Massachusetts Water Resources Authority; Prof. Tim Tyrrell, University of Rhode Island; Rhode Island Department of Economic Development; Travel Industry Association; Woods Hole Oceanographic Institute; National Oceanic and Atmospheric Administration; U.S. Department of Commerce; and U.S. Fish & Wildlife Service

Thanks to EPA's New England Office staff for their contributions, including the following members of the 1997 Workgroup: Norm Beloin, Janine Burke, Diane Castricone-Boisclair, Greg Charest, Beth Deabay, Cynthia Greene, Greg Hellyer, Maureen Hilton, Diane Kelley, Katrina Kipp, Matt Liebman, Stafford Madison, Sally Mansur, Katie Maser, Maureen McClelland, Wendy McDougall, Robin Neas, Peter Nolan, Dwight Peavey, Maria Pirie, Ann Rodney, Mary Beth Smuts, Mark Stein, Alan Van Arsdale, Len Wallace, Jeri Weiss, and Norm Willard

United States Environmental Protection Agency - Region 1
Office of Public Affairs
John F. Kennedy Building, RAA
Boston, Massachusetts 02203-0001

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