

UNITED STATES
ENVIRONMENTAL PROTECTION
AGENCY REGION I

WASTE MANAGEMENT DIVISION
J.F. KENNEDY FEDERAL BUILDING
BOSTON, MA 02203



WASTE MANAGEMENT DIVISION 1986 ANNUAL REPORT

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assistance of Region I Waste
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To Our Readers:

If I had to characterize 1986 in one word, I would use the word, change. There were several changes in the Waste Management Division and in the laws we implement.

One major change was the reorganization of the Division. Although the reorganization was effective in February, staff and management had to deal with transitions throughout the year. I am pleased that we did so, while still managing to keep the programs going at an admirable pace.

The second change was, and continues to be, in our hazardous waste regulatory program under RCRA. That program is in a transition from its older responsibilities to implementation of the 1984 amendments.

One additional change was necessary because we began the fiscal year without the benefit of the reauthorization of Superfund. Without Superfund legislation, funding was sporadic. The program had to go from one focusing on as many Superfund sites as possible, to one which could only try to maintain ongoing site activities.

The year closed with yet another change: implementation of the Superfund Amendments and Reauthorization Act (SARA). We now have a new bill, a new mandate from Congress, and nine billion dollars to help us clean up Superfund sites.

This report presents where we've been in 1986. We've described the waste management picture in New England, highlighted some of our specific accomplishments, and explained how we see the challenges for 1987.

We have made progress in the past year and the staff of the Waste Management Division can be proud of all they have accomplished. On behalf of the staff, however, I want to thank all those who have helped us, including our State partners and the public. Special thanks also are due the other programs and offices in EPA Region I for their advice and cooperation in helping us make better decisions. Finally, I want to thank our Regional Administrator and Deputy, Mike and Paul, for their help and support during the year.



Merrill S. Hohman, Director
Waste Management Division

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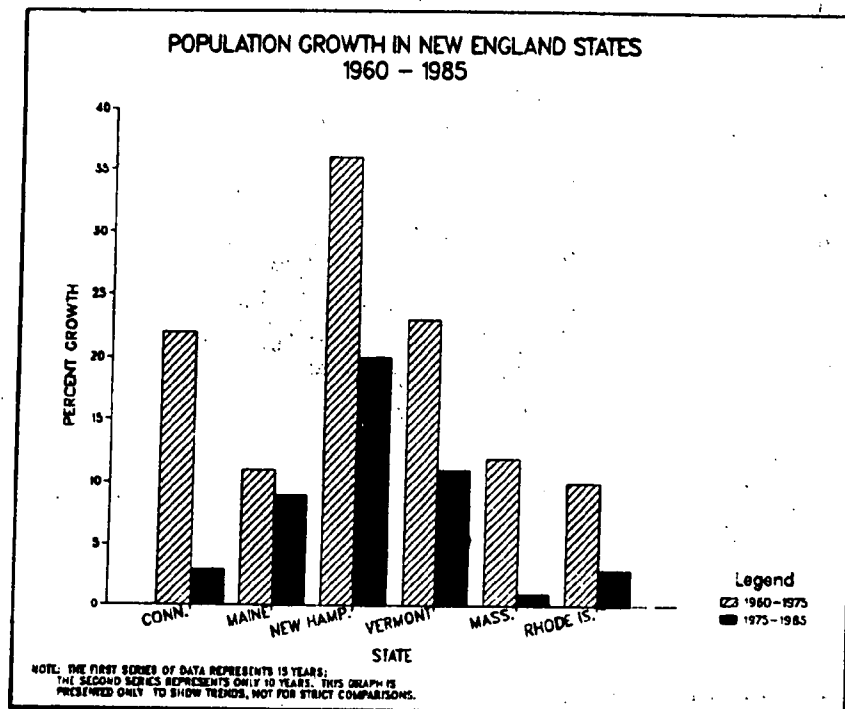
Driving Forces

To understand the hazardous waste mandate assigned to EPA by Congress and the accomplishments of the Waste Management Division in Region I, we must first review the unique demographic and economic characteristics of New England. A quick look at these "driving forces" will help in understanding the challenges faced by EPA's Region I office.

New England is marked by contrasts. The southern States, Rhode Island, Connecticut and Massachusetts are among the most urbanized in the country. The northern States of Vermont, New Hampshire and Maine retain a largely rural character and have relatively low population densities (populations range from 535,000 in Vermont to just over 1 million in Maine). However, the northern States are growing quickly.

Figure 1 shows high growth rates (from 9% to 20%) over the past 10 years in New Hampshire, Vermont and Maine. In contrast, the southern States of the region were growing at close to 3%, although the previous 15 years showed higher growth in these States. This continuing growth in the northern states' population will lead to increasing stresses on the environment (e.g., more people dependent on groundwater and disposing of their wastes), whereas the population in the southern states has already produced major stresses.

Figure 1

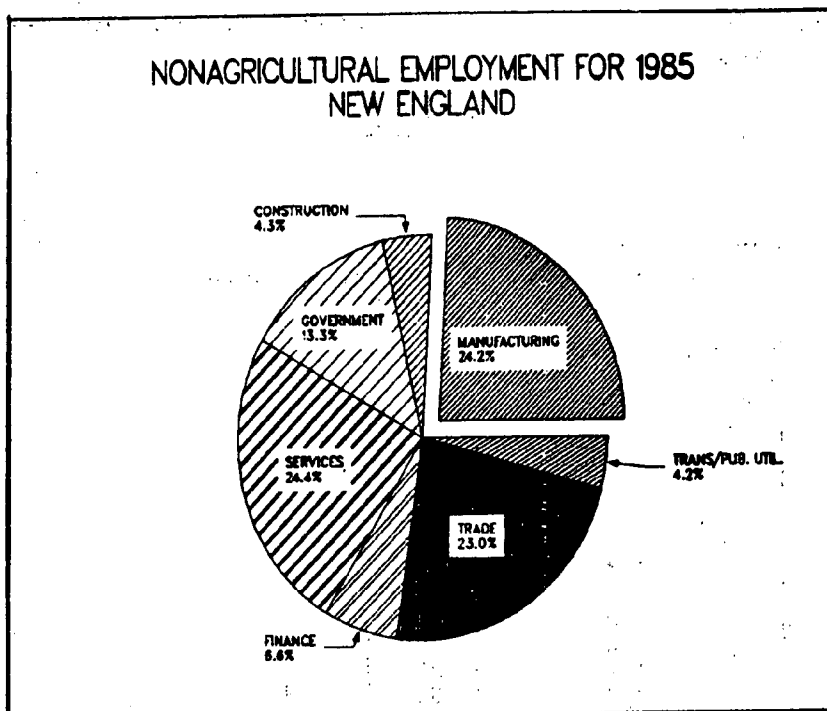


Source: Census Bureau, Boston Regional Office

In addition to the changes posed by population shifts, New England is the nation's oldest urbanized and industrialized region, and, as such, often has environmental problems quite different from other parts of the country. For example, the region lost its original industrial base to foreign competition during the early and middle part of the century. In an effort to recover these losses, New England shifted to high-tech and service industries faster than other regions.

Figure 2 shows that service-related industries now account for almost one-quarter of the employment in the region, with another quarter in manufacturing. Figure 3 further breaks out the manufacturing industries and shows that electrical machinery and instrument manufacturing employment make up 24% of the total manufacturing employment in New England. However, there are other large employers that will also affect waste management in the region. Paper and printing make up about 11% of the manufacturing workforce, and chemicals, plastics and rubber manufacturing make up another 8%.

Figure 2

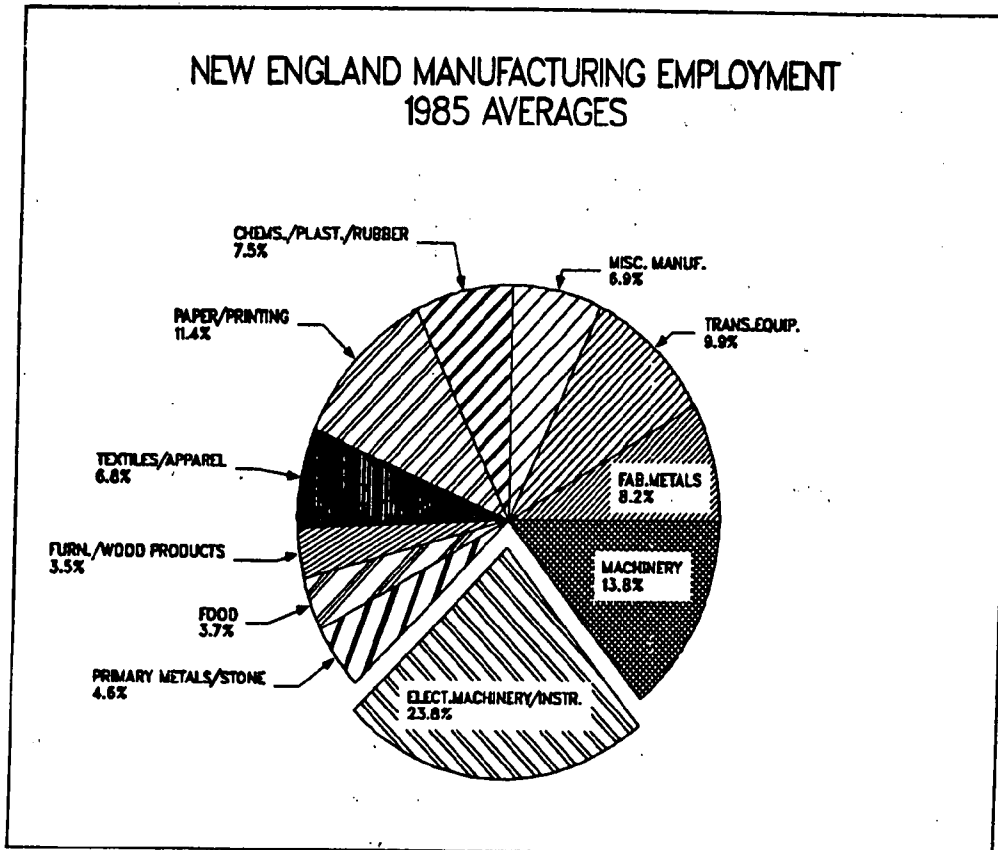


Source: Bureau of Labor Statistics, Boston Office

The success of this shift in industry type is evidenced by the fact that the overall economic picture for New England is considered steady by economists. In 1985, the region's unemploy-

ment rate was 4.3% compared to the U.S. unemployment figure of 7.0%. In addition, all New England States experienced increases in total employment over the year.

Figure 3



Source: Bureau of Labor Statistics, Boston Office

New England's growth and shift to service in industry has not, however, reduced the generation of hazardous waste. New England industries reported generating 441,000 tons of hazardous waste in 1985. This amount is 30% higher than that reported in 1983. Figure 4 shows the percent of hazardous waste each State in the New England region generated in 1985. Industries in Connecticut and Massachusetts alone generated 87.4% of the hazardous waste in the region; this is slightly lower than the share they generated in 1983 (89.9%).

Although New England States most often ship their hazardous waste out of the region (see Figure 5), this does not make our job easier. We still must educate and regulate a variety of businesses and industries in the Region, and encourage alternatives to generation and treatment of hazardous waste (for example, recycling or reuse).

Figure 4

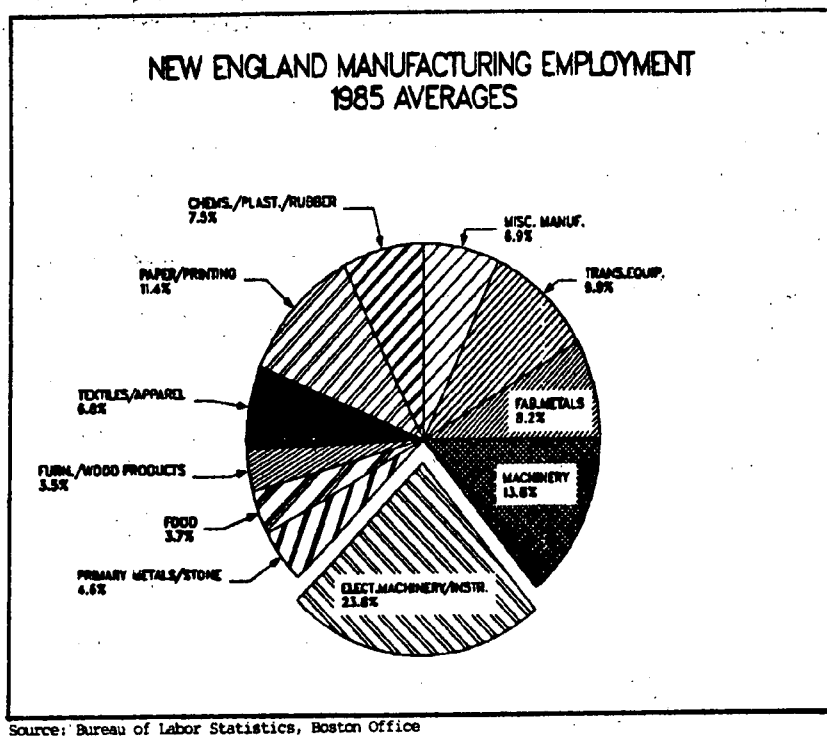
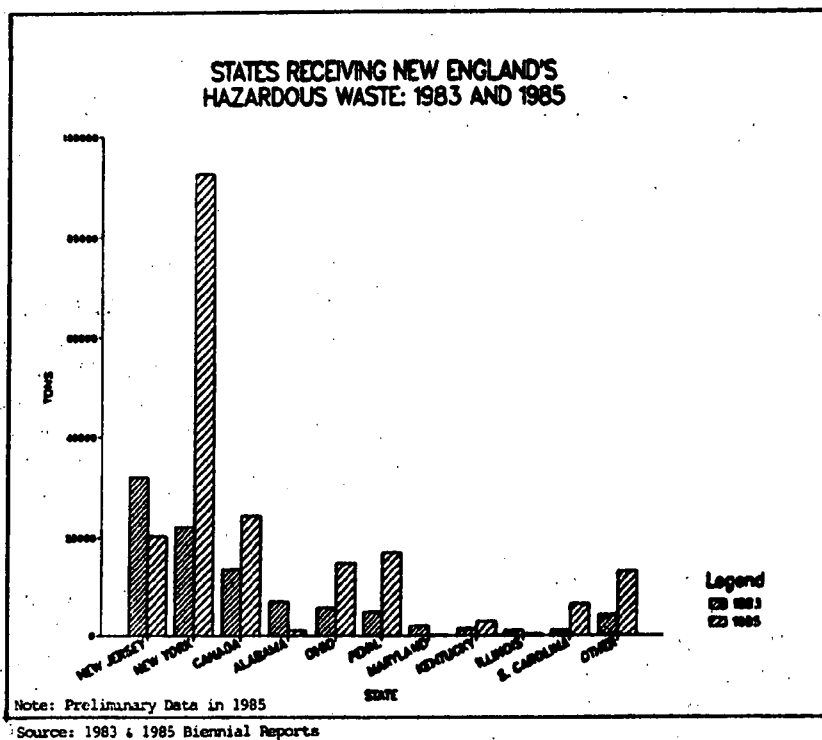


Figure 5



Nor is the Region free from the effects of past hazardous waste generation. New England has 58 sites proposed or listed on the National Priorities List; all are in some phase of the Superfund process. As shown in Table 6, many environmental media are affected by Superfund sites. For example, 91% of our NPL sites affect groundwater supplies, and 79% affect wetlands. Through integration of our programs at EPA, we are addressing these various media problems.

NEW ENGLAND'S SUPERFUND SITES

<u>Table 6</u>	<u>Environmental Resource Affected</u>	<u>Number of Sites Affecting Resource</u>
	Groundwater - with the potential for drinking water contamination	53
	Wetlands	46
	Surface Water	39
	* 46 of New England's 58 Superfund sites are in residential areas.	
	Source: Carl Deloi, Waste Management Division	

Figure 7 shows the number of drinking water wells affected by both Superfund sites and leaking underground storage tanks. Although these contaminated wells take a long time to clean up, pump and treat systems (described in more detail in the New Hampshire and Connecticut State sections), as well as other State and EPA actions are proving successful at lowering the levels of contamination.

Water Supplies Affected By Superfund Sites or Leaking Underground Storage Tanks

Table 7

<u>Source of Contamination</u>	<u>Community Water Supplies Affected</u>	<u>Private Water Supplies Affected</u>	<u>Supplies Out-of-Service and Now in-Service</u>
Superfund Sites	20	112	4
Underground Storage Tanks	13	410	4

Note: 21 non-community supplies affected by Superfund sites or leaking underground storage tanks are not included in totals above.
Source: Dave Chin, Water Supply Branch, Region I Water Division

Throughout this report, we have focused on Congressionally mandated hazardous waste goals and our accomplishments toward meeting those goals. In New England, we need to improve current hazardous waste management, remedy the problems created by past practices, and encourage the reduction of hazardous waste generated in the future. If we succeed in doing so, we will indeed move toward the goals of the waste management programs of EPA.

Region I's Waste Management Division

Growth of the Division

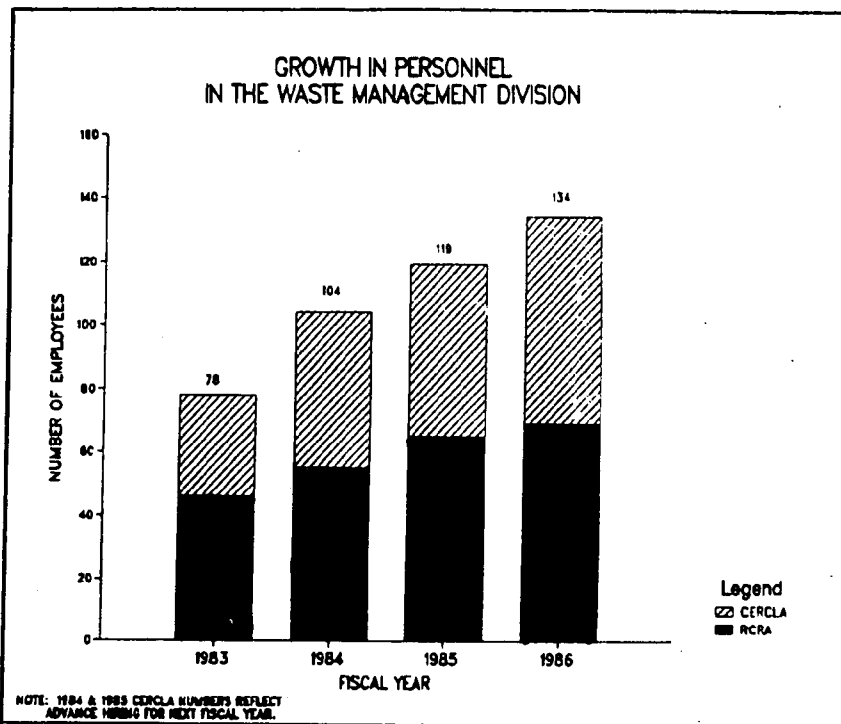
The Waste Management Division in Region I has grown substantially with the expansion of Federal waste management authorities: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); and the Resource Conservation and Recovery Act (RCRA - includes the Underground Storage Tank program).

The passage of RCRA in 1976 brought six employees into the Regional office to work on implementation of RCRA. This number had grown to 17 by 1980 when CERCLA passed in December of that year.

In 1982, the Region reorganized by dividing the Air and Hazardous Waste Division and disbanding a separate Enforcement Division. The new Waste Management Division was created with overall responsibility for both RCRA and CERCLA.

The Division has continued to grow to keep up with expanded responsibilities. Figure 8 shows the Division has increased by 72% in the last four years, with the Superfund program doubling in size. Contractor assistance also provides substantial support to staff in both programs.

Figure 8



Reorganization of the Division

During 1986, Region I's Waste Management Division completed a major reorganization, designed to address the expansion in staff and to focus on four specific goals of Division management:

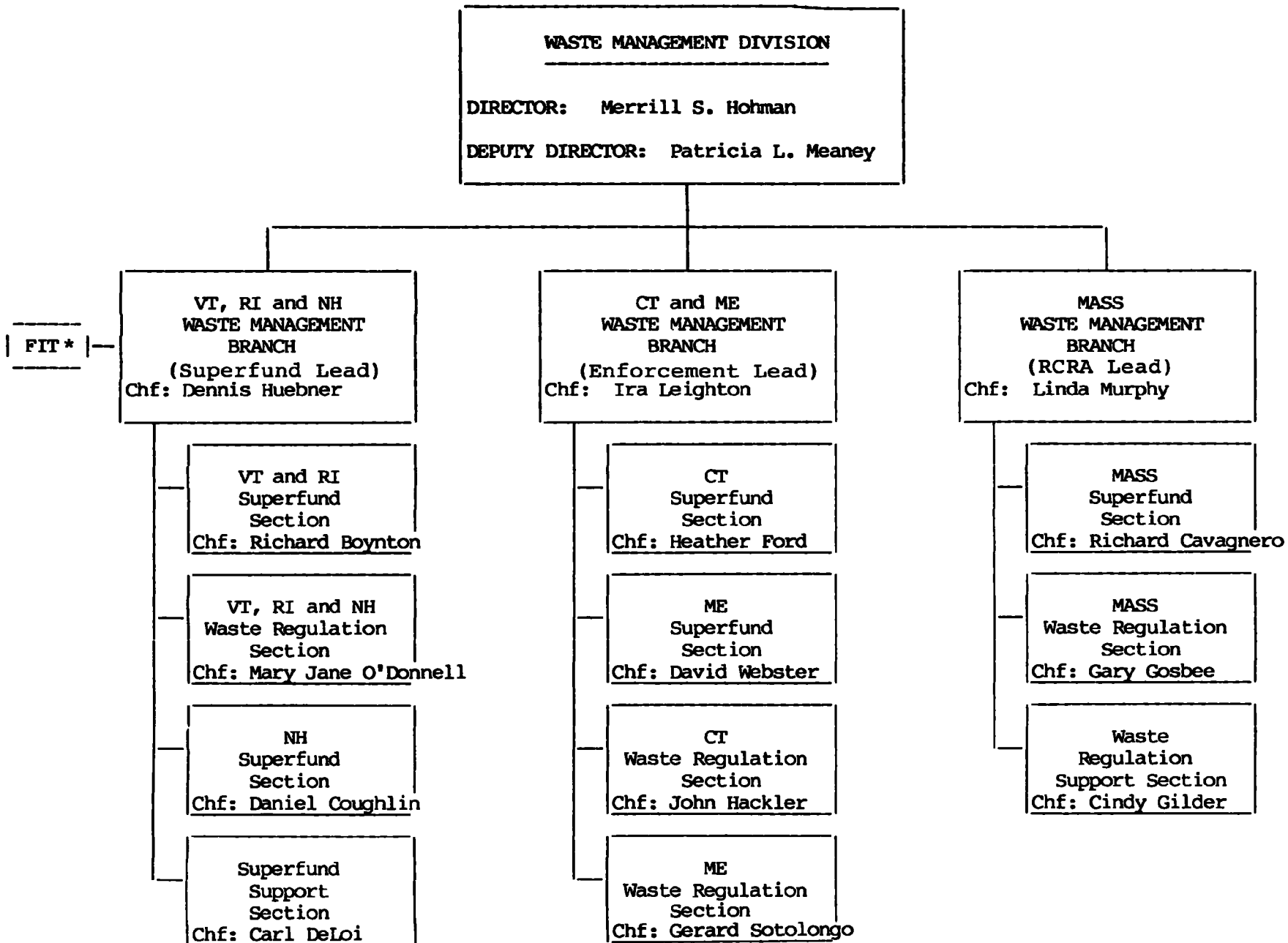
- 1) to address waste management issues within each State as a whole, rather than as two distinct programs;
- 2) to focus on the unique nature of each State, and maintain a balance among States;
- 3) to encourage staff to use the statute which best addresses the problem (some sites may be both RCRA facilities and Superfund sites); and
- 4) to manage activities at sites/facilities from an integrated perspective; site managers and permit writers are no longer separated from enforcement.

Chart 9 shows the current organizational structure. The Division is now organized in a unique geography-based structure. Each of the three Branches has responsibilities for RCRA, CERCLA and Enforcement. The primary distinctions among the Branches are the state and program-lead responsibilities (i.e., RCRA, Superfund, Enforcement). We will continue to monitor the success of this structure over the next few years and make changes as necessary. (Superfund reauthorization will again lead to future changes in the organizational structure to accommodate growth in that program).

The New England Waste Management Organization Assoc. (NEWMOA)

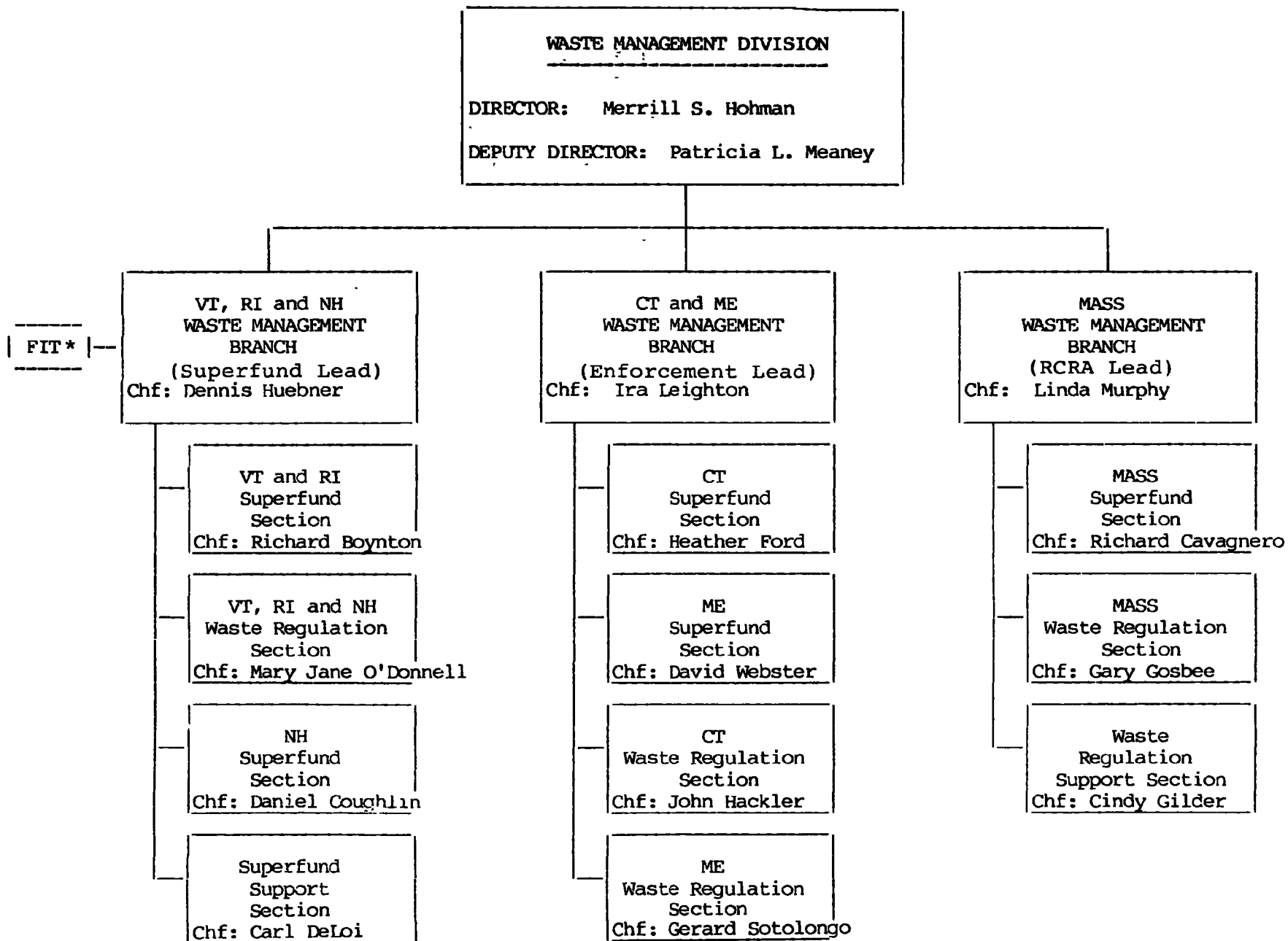
With funding and staff support from the Waste Management Division, NEWMOA was established as an association to provide input to EPA on policy and regulatory decisions from the New England States. Throughout the year, NEWMOA hosts State/EPA technical and management meetings. These meetings bring together staff and management from the two regulatory levels to exchange ideas and information about environmental regulations and technical issues.

Chart 9



*FIT = Field Investigation Team; contractor provided staff to carry out preliminary investigations under CERCLA.

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*FIT = Field Investigation Team; contractor provided staff to carry out preliminary investigations under CERCLA.

The Superfund Program in Region I

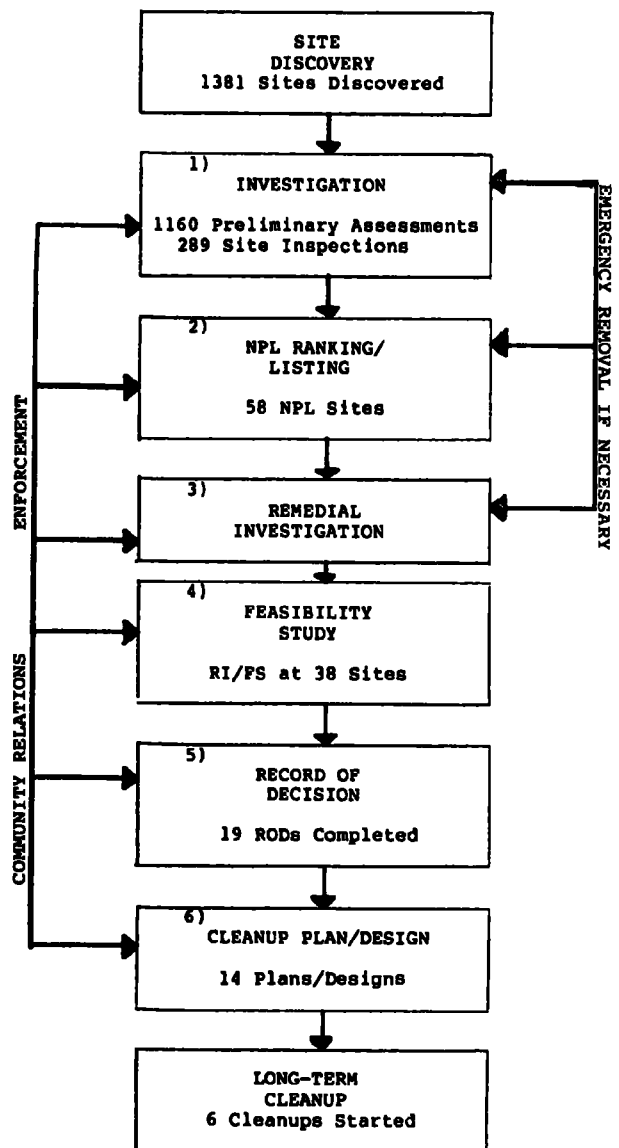
"'remedial action' means those actions taken... in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment."

CERCLA, Section 101(c)

In passing CERCLA, or Superfund, Congress charged EPA with overseeing the clean up of uncontrolled hazardous waste sites to protect human health and the environment. The following section describes EPA's program to meet its charge and Region I's accomplishments in the program. Figure 10 shows the steps described below, and the number of New England sites in each stage of the Superfund process as of December, 1986.

FIGURE 10

THE SUPERFUND PROCESS



Source: Carl Deloi, Waste Management Division

Site Investigation

After a site is discovered, it is investigated, usually by the State using funds provided by EPA (Step 1). In New England, we have discovered 1381 sites. Investigation of a site involves two steps, a preliminary assessment and a site inspection. The States or EPA have conducted preliminary assessments at 84% of these sites, and site inspections at 21% of the sites.

If the preliminary assessment and site investigation indicates further action is warranted, the State or EPA then evaluates the site numerically (Step 2) using the Hazard Ranking System that takes into account:

- ° Possible health risks to the human population;
- ° Potential hazards (e.g., from direct contact, inhalation, fire and/or explosion) of substances at the site;
- ° Potential for the substances at the site to contaminate drinking water supplies;
- ° Potential for the substances at the site to pollute/harm the environment;

The product of this ranking is the Hazard Ranking System Score. If this score indicates the site's problems are serious, it will be listed on the National Priorities List (NPL). Region I has 58 sites on the NPL (6.5% of the national total of Final and Proposed NPL sites).

Listing on the NPL means the site is eligible for Federal Superfund money and enables EPA to continue the Superfund process outlined in Figure 10.

Studies of Contamination

Next, EPA (or the State under an agreement with EPA) usually conducts a remedial investigation (Step 3). The remedial investigation (RI) assesses the extent of contamination, defines the contaminants that are present; and characterizes potential risks to the community. Then EPA directs or conducts a feasibility study (FS) which examines the feasibility of various cleanup alternatives (Step 4). This entire process is known as the RI/FS. Region I has started an RI/FS at 66% of the NPL sites in the region.

One strategy EPA has adopted for complex sites is known as addressing a site through "operable units." When we know that cleanup of the entire site will take a long time, the "operable unit" concept allows us, for example, to control the source of contamination first and then to address a groundwater problem at a later date. We have started an RI/FS for 44 operable units at 38 NPL sites.

Selecting the Remedy

After the RI/FS is completed, the EPA issues a Record of Decision (ROD - Step 5) summarizing the alternatives evaluated during the feasibility study and documenting EPA's chosen cleanup alternative. This document is issued to ensure the decision process and the cleanup or remedial action are consistent with CERCLA and other environmental statutes. Region I completed five RODs in 1986.

Once the Record of Decision is issued, a specific cleanup design (Step 6) is done and work is contracted (by public bidding) to do the cleanup. Region I has started 14 of these final designs, some at operable units, and has started remedial work at six sites.

Why Does It Take So Long

The time it takes to complete each of these steps varies with every site.

The need for adequate data on which to make major cleanup decisions means that the analysis of samples from the RI/FS involves strict, and often time-consuming, quality control and quality assurance checks. Region I has developed a management system with laboratories under the Contract Lab Program to achieve faster turnaround from these labs.

Although good management of the Contract Lab Program allows us to identify and correct problems in laboratory work, the RI/FS process is a multi-disciplinary venture requiring review and consultation with a number of specialists. Hydrogeologists, public health officials, chemists, engineers, economists, regulatory officials, lawyers, and wetland biologists are often involved. Further, these specialists are from a number of interested parties including various EPA offices in Region I and nationwide, State governments, local governments, the Corps of Engineers, the Fish and Wildlife Service, and potentially responsible parties, in addition to the public. While EPA's job of coordinating the efforts of these participants is essential to a balanced, quality study, the coordination of the planning and review of the various portions of the RI/FS is a time-consuming task. The RI/FS process previously described often takes 2 to 3 years to complete.

Finally, preparing the engineering design for the selected remedy may take 6 months to a year, and implementing the remedy - the actual containment or removal of the waste - may take up to 3 years. If groundwater contamination is involved the final cleanup may take many more years.

Even after the initial construction has been completed at a site, long-term operation and maintenance may be required until the environment is "cleaned up." For example, a system constructed to pump and treat groundwater may need to operate for five years or more before contaminants are removed. In this case, final cleanup won't be declared by EPA for many years.

There are also several ongoing activities taking place during the process described previously.

- ° Emergency Removal Actions. Periodic monitoring of site conditions will indicate if a site becomes an imminent threat to public health or the environment during the normal course of an RI/FS. If this happens, work on the RI/FS is halted and EPA may conduct an emergency cleanup. Emergency removals may involve digging up and removing leaking drums, fencing a site to prevent children from entering the area, or supplying bottled water to residents whose drinking water supplies are contaminated. In Region I, this work is carried out by the Environmental Services Division.
- ° Community Relations. During the course of the Superfund process at a site, the EPA usually conducts two public meetings. The first is an informal meeting to outline the conclusions of the studies at a site and to answer questions from local citizens and other members of the public. The second is a public hearing to officially receive written and oral comments from the public. Since EPA's goal is to select a remedy which adequately protects human health and the environment, hearing citizen's opinions regarding proposed remedies is a fundamental part of the process. Following the public hearing, EPA bases its selection of a remedy largely on the RI/FS and public comments received.
- ° Enforcement. Once a site is defined as an NPL site, EPA undertakes a thorough investigation to identify parties who may be responsible for the waste contamination problem. This search for potentially responsible parties (PRPs) can and often does continue throughout the RI/FS process.

Enforcement in the Superfund Program

The backbone of Superfund enforcement is the legal authorities which empower EPA to compel those responsible for pollution problems to either clean up the problem or pay for the cleanup after the fact. In order to conserve State and/or Federal Superfund dollars, the Superfund enforcement program strives to persuade potentially responsible parties (PRPs) to clean up Superfund sites wherever these parties can provide adequate, effective, and timely action. Where Federal Superfund dollars are spent, EPA seeks to recover the costs of EPA cleanup activities.

Although EPA is willing to negotiate with private parties to encourage their undertaking the cleanup, we have the authority to legally force those responsible to take specified cleanup actions or recover government costs expended in cleanup. CERCLA also contains a very strong tool known as "joint and several liability" which empowers EPA to designate one entity (or company) as a PRP and therefore liable for the cleanup. The following example shows the effort required in identifying PRPs.

Cannon's Enforcement Case

The Cannon's Engineering Corporation enforcement case involves four sites and approximately 600 PRPs. The four sites, located in two states are: Cannon Engineering Corporation in both Bridgewater, and Plymouth Harbor, Massachusetts; and Tinkham's Garage and Sylvester's in New Hampshire. In 1986, letters were sent to all PRPs notifying them of their status as potentially responsible for contamination at the sites. The first meeting with the 600 PRPs was held in May, 1986. EPA had to discuss findings, intent, and suggest a manner of dealing with this large group of PRPs.

In addition to the large number of PRPs involved in this case, Region I is considering EPA's first "de minimus settlement" in the nation. This means we will settle with the small contributors and absolve them of liability for an appropriate share of the investigation and remedy cost. This will leave us free to work with the large contributors at the site.

The number of PRPs involved in the Cannon's case forced Region I staff to develop new approaches to PRP searches. We now have comprehensive management plans for those sites with large enforcement cases and use computers to facilitate the search and manage the seemingly unmanageable thousands of pages of information from the companies involved.

PRP Team

To assist with these large and complex cases, our 1986 reorganization included the establishment of a special team to focus on searching for, identifying and notifying PRPs. Because PRP searches are the foundation for any enforcement action in Superfund, and are often very complex, team members help site managers plan PRP search efforts. In some high priority or complex cases with numerous PRPs, the Responsible Party Team may take the lead in managing government contractors who conduct the search for PRPs.

The Team was established as a focal point for PRP work undertaken at all NPL sites and is developing a Regional approach for doing PRP work which ensures consistency in the PRP identification and notification process at all Region I Superfund sites. Present policy dictates that we identify PRPs as early in the process as possible, and the establishment of this team will assist us in meeting the goals of this policy.

Costs of Cleanup

The complex and detailed studies to determine how best to clean up each Superfund site and the actual cost of the remedies selected are expensive.

Table 11 shows the dollars spent in each State in New England to address Superfund sites (both remedial and removal actions) and the percent of monies spent in relation to the number of Superfund sites in the State. Massachusetts has the largest number of Superfund sites and 45% of the monies spent have been spent on Superfund sites in Massachusetts.

TABLE 11

Superfund Expenditures on NPL Sites
in New England States

<u>State</u>	<u>Number of NPL Sites</u>	<u>Percent of Monies Spent</u>	<u>Total Fund Dollars Spent</u>
Massachusetts	21	45 %	\$ 33,627,400
New Hampshire	13	33	24,955,300
Rhode Island	8	11	8,498,200
Maine	7	6	4,883,100
Connecticut	6	2	1,748,000
Vermont	2	2	1,489,900

* June 1986 Figures.

Source: Ruth Leabman, Waste Management Division

Superfund Slowdown

In the 1980 CERCLA, Congress authorized a \$1.6 billion, 5-year program for cleanup of Superfund sites. Figure 12 shows the amount Region I used from fiscal year 1983 to fiscal year 1986. These funds are used for:

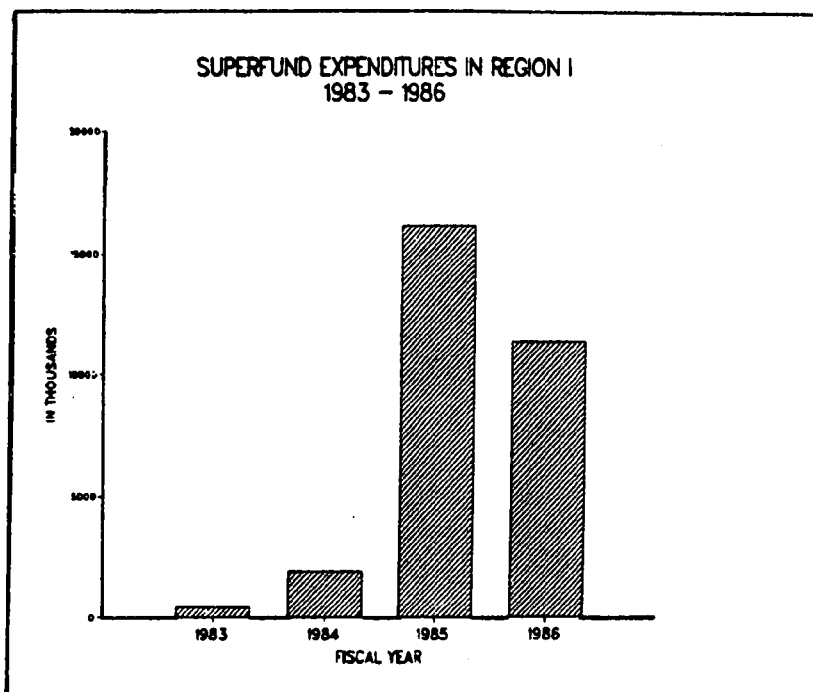
- 1) Program contractors, who do much of the Superfund work such as sampling and construction for selected remedies;
- 2) Inter-Agency Agreements, which allow EPA to use other Federal agencies such as the Corps of Engineers or the U.S. Geological Survey for work at Superfund sites; and
- 3) Cooperative Agreements with the States, which allow EPA to provide funds to the States on a site-by-site or multi-site basis to assist us in addressing Superfund sites.

The Act, and funding, expired in December 1985 (early fiscal year 1986). Examination of Figure 12 shows that Fiscal Year 1986 was a very different funding year for Superfund. Until then, we received an "allowance" twice a year. We knew how much (in dollars) we would be receiving at six-month intervals. This allowed us to plan for use of funds at different sites. We could move funds around to address particular site problems, if needed.

During Fiscal Year 1986, while awaiting passage of a new Superfund law, we were able to use "carry-over" funds for the first part of the year. We received money several times during the year through interim measures from Congress, and although these funds kept the program going, we could not do any planning. No new remedial designs or remedial actions were started in 1986.

Funds went only to those sites that already had studies or actions underway. These funds also had strings attached; the funds often had to be obligated or spent by the end of the month they were allocated.

Figure 12



Source: Comptroller's Office, Region I EPA

Essentially, the available funds were used to continue ongoing projects. Contractors were forced to slow down work at sites because they were unsure of continued funding. Receiving funds from Congress in this manner also created more paperwork for the Regional office and more meetings with contractors and site managers to coordinate activities.

At any Superfund site, the State is required by law to match EPA expenditures by 10% or 50%. In Fiscal Year 1986, we asked States to provide an "advance match". Massachusetts was able to provide their match at the front end of the process, which allowed work to continue while Congress debated the amendments to Superfund.

In October, 1986 Congress passed and the President signed, the Superfund Amendments and Reauthorization Act of 1986 (SARA). SARA established an \$8.5 billion, 5-year Superfund program extension. At the end of 1986, Region I was awaiting receipt of new funds to begin to move our sites through the process once again.

The RCRA Program in Region I

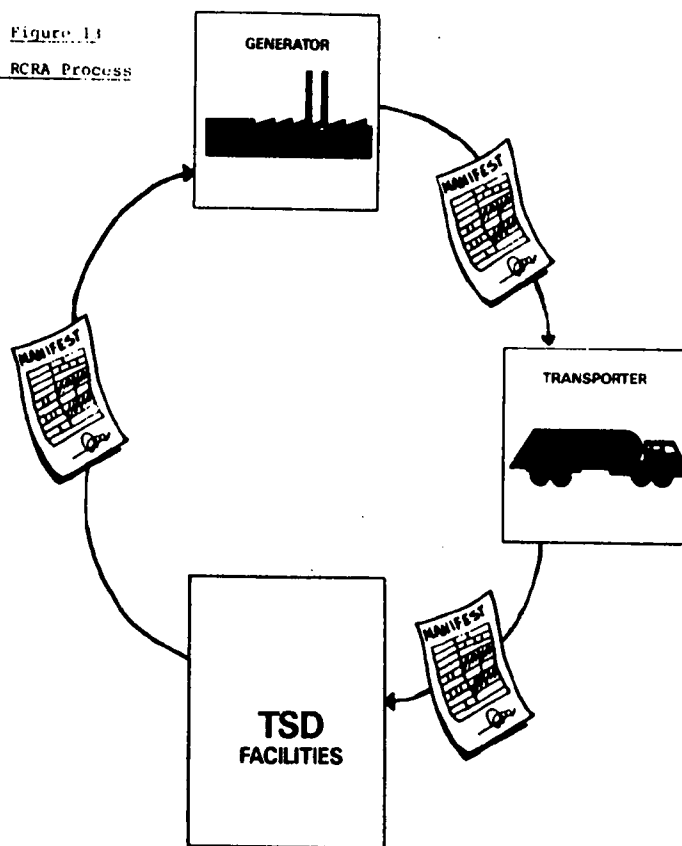
The Resource Conservation & Recovery Act (RCRA), passed by Congress in 1976 and amended in 1984, was designed to improve the way industry handles hazardous wastes. Specifically, the goals set by RCRA are:

- ° Protect human health and the environment
- ° Reduce waste and conserve energy and natural resources
- ° Reduce or eliminate the generation of hazardous waste as expeditiously as possible

To achieve these goals, RCRA established a "cradle to grave" management system for the safe handling of hazardous wastes. The Act also established a permit system for hazardous waste treatment, storage and disposal facilities (TSDFs), authorized State programs to operate in lieu of Federal programs and provided strong enforcement authorities to EPA.

In 1984, RCRA was amended by the Hazardous and Solid Waste Amendments (HSWA). These amendments established time tables for issuance of RCRA permits, required that permits also address any release to the environment (corrective action), established a special permitting process to encourage alternative treatment technology and required EPA to begin a process of barring certain untreated wastes from land disposal. The amendments also established a Federal program to address the growing problem of leaking underground storage tanks.

Figure 1.1
The RCRA Process



Source: EPA RCRA Orientation Manual

The "Cradle to Grave" Management Process

The RCRA process starts with generators of hazardous wastes (See Figure 13, number 1). It is the generator's responsibility to determine whether their wastes meet RCRA's definition of a hazardous waste (ignitable, corrosive, reactive, toxic). More than 450 chemicals and other wastes are automatically considered hazardous. Generators are regulated when they produce more than 2,200 pounds (1,000 kg) of wastes each month. Certain highly toxic compounds, such as arsenic and some discarded pesticides are regulated in small quantities (2.2 pounds or 1 kg). Generators of between 100 Kg and 1000 Kg of hazardous waste in a calendar month are also under the purview of the law. The Waste Management Division and New England States are responsible for regulating 8210 hazardous waste generators.*

RCRA allows generators to store their own wastes onsite for up to 90 days without a permit. Some facilities that store hazardous waste have chosen to limit the amount of time they store the wastes in order to avoid being considered a management facility.

When wastes are to be shipped off-site, the generator prepares a "manifest" (number 2) which describes the wastes and identifies the transporter and the facility to which the wastes will be shipped. Wastes from large generators (as opposed to small quantity generators) may only be sent to facilities with RCRA permits or operating under interim status. Permits are issued by States authorized by EPA, or by EPA.

Transporters (number 3) of hazardous wastes are required to carry the manifest prepared by the generator and must follow all applicable Department of Transportation safety regulations.

Treatment, storage and disposal facilities (TSDFs) receive the waste from transporters (number 4) and are required to return the manifest to the generator (number 5), thus completing the "cradle to grave" hazardous waste management system. All TSDFs are required to have RCRA permits, as described later in this report. As of December, 1986, these were 506 TSDFs in Region I.

State Authorization

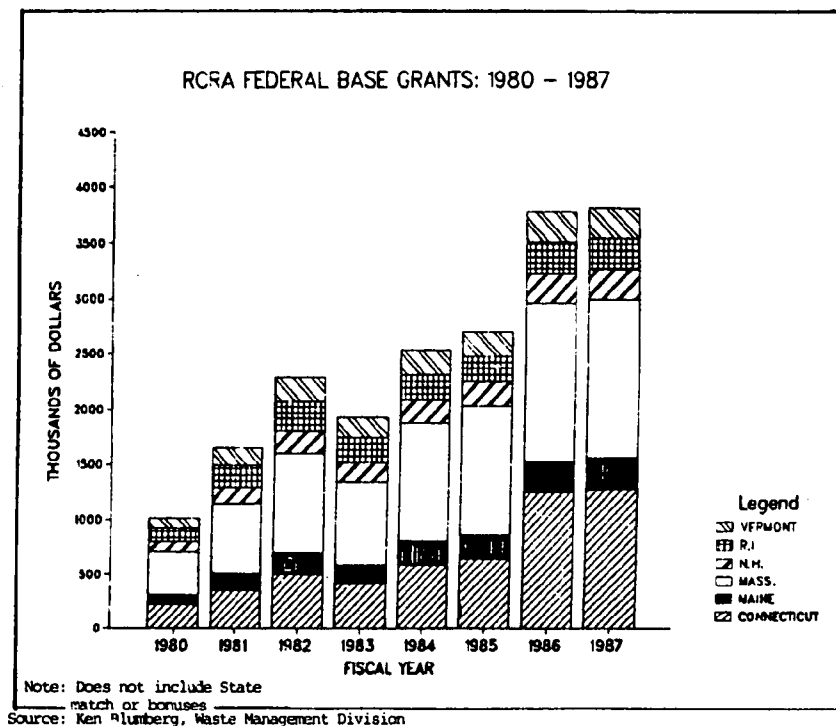
As with many environmental laws, RCRA provides for the States to take over the program. In order to be authorized to run the RCRA program, States must demonstrate that their laws and regulations are at least equivalent to, and consistent with, Federal regulations. States must continually update their programs to keep them consistent with Federal requirements. Vermont, New Hampshire and Massachusetts received RCRA authorization prior to 1986. During 1986, Rhode Island was granted authorization. In Maine and Connecticut, EPA and the States are working closely to develop State programs adequate to receive authorization. Decisions are expected in early 1987 for these two states.

* Preliminary numbers from the 1985 State biennial reports.

RCRA Grants to States

Because the RCRA program is carried out largely by the States, EPA issues grants to the States to help implement RCRA. Figure 14 shows the amount of RCRA grant monies EPA has issued to the States since fiscal year 1980. The grants include funds for permitting, inspections and enforcement. EPA reviews State progress regularly to ensure that the State programs meet the goals negotiated in the grant documents. The State is also required to add 25% to the grant as a "State match."

Figure 14



RCRA Permits

As noted earlier, all treatment, storage and disposal facilities are required to have permits issued by EPA or an authorized State. However, Congress recognized that all facilities could not be permitted immediately and so established a procedure whereby facilities in operation prior to November of 1980 would receive interim status and be allowed to operate pending issuance of the actual RCRA permit. Under interim status, facilities must comply with general operating conditions established by EPA regulations.

Facilities granted interim status under RCRA were to continue to operate in that mode until EPA or an authorized State called in their permit application (so-called "Part B") and issued or denied the permit.

Treatment, storage and disposal facilities must develop contingency plans to protect health and the environment, and prepare closure and post-closure plans if they intend to cease operations. A financial requirement was established to assure that funds are available to pay for closing a facility and to compensate for post-closure care at disposal facilities. In addition, the owner or operator of a facility must obtain liability coverage to compensate individuals for bodily injury and property damage caused by accidents related to the facility's operation.

In addition, land disposal facilities (landfills, waste piles and surface impoundments) are required to install groundwater monitoring wells to detect any leakage from the site and to take measures to control such leakage if it is detected.

Loss of Interim Status

Under the 1984 Hazardous and Solid Waste Amendments (HSWA), interim status land disposal facilities were subjected to additional requirements. These facilities were required to certify compliance with all groundwater and financial responsibility requirements, and to submit a final permit application. If facilities could not comply by November 8, 1985 they lost interim status and were required to cease operation on that date. During 1986, Region I had to review these certifications and, where indicated, take enforcement action (see discussion on RCRA enforcement). At the start of 1986, Region I regulated 137 land disposal facilities. By the end of the year, the number was reduced to 109 as a number of these facilities initiated closure activities rather than seek operating permits.

HSWA Deadline for Permitting

In HSWA, Congress established a schedule for completion of RCRA permitting. Facilities operating under interim status must either receive a permit or cease operation under the following schedule:

<u>Type of Facility</u>	<u>Permit Issuance By</u>
Land Disposal	November, 1988
Incinerator	November, 1989
Storage and Treatment	November, 1992

Encouraging Alternative Treatment Technologies

The 1984 Amendments to RCRA allowed for issuance of a permit to encourage the use of alternate treatment technologies for hazardous waste. These "Research, Development, and Demonstration" permits allow facilities to employ innovative and experimental technologies. To expedite review of these permits, EPA may waive the usual permit requirements, with the exception of financial responsibility and public participation. Several of these permits are currently under review in Region I.

Corrective Action

The 1984 Amendments to RCRA mandated corrective action at RCRA facilities. Corrective action permits or orders will be issued to RCRA facilities that have released hazardous waste constituents that threaten human health or the environment. Through these orders or permits, facilities are compelled to clean up contamination that has occurred due to operation of the facility. This will most often apply to contamination of groundwater, but could also involve soils, surface water and sediments, subsurface gas or air.

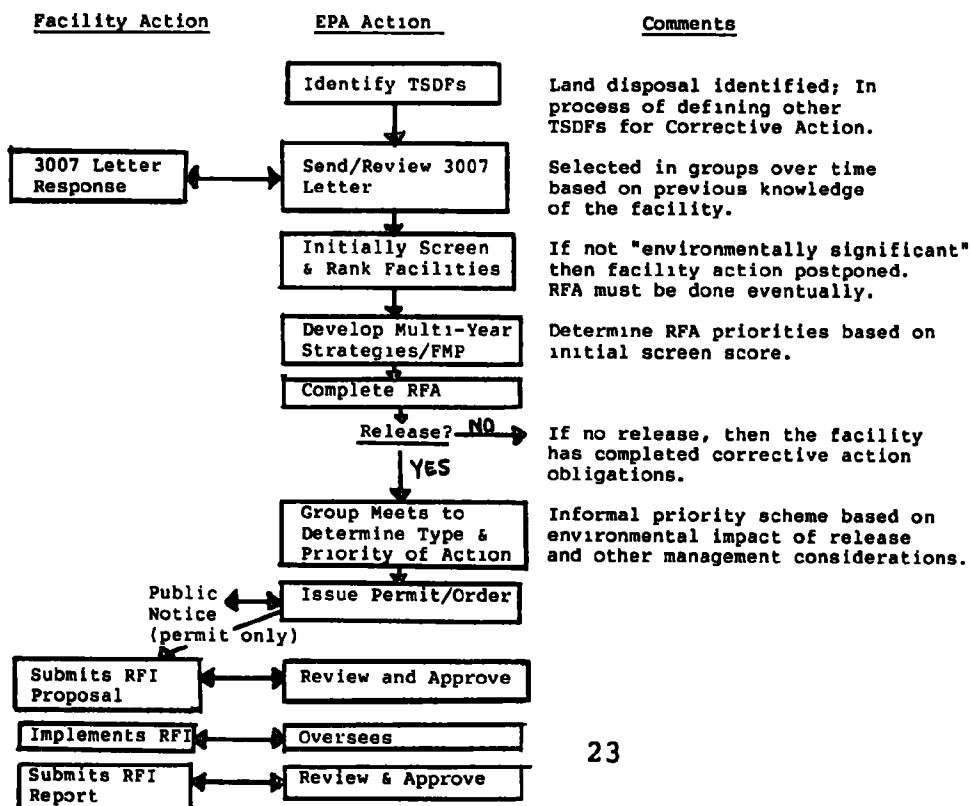
Facility Management Planning Process

Although we are focusing on land disposal facilities as our first priority, all TSDFs are subject to corrective action provisions. Because the number of facilities requiring corrective action could be substantial (Region I estimates 350 facilities), the Waste Management Division developed a priority setting process to determine in what priority facilities will be addressed. Another purpose of the process is to make corrective action decisions as consistently as possible in the Region.

Chart 15 shows the priority setting process developed in the Region in 1986. Briefly, TSDFs were identified and issued letters requesting information (RCRA Section 3007 letters). As facilities responded to these letters, each facility was ranked based on program and environmental considerations. The ranking system determines the facility's "environmental significance."

Figure 15

Facility Management Planning Process



A RCRA Facility Assessment will then be conducted at all TSDFs, based on their priority standing, to determine if a release of contaminants has occurred. If no release has occurred, the facility has completed its corrective action obligations.

If, however, a release has occurred, another priority setting takes place based on the potential environmental impact of the release and other management considerations. The facility is then put in line for a corrective action permit or order and will be addressed according to its priority standing. Region I completed the FMP initial ranking for 137 land disposal facilities in 1986 and determined that 128 were environmentally significant.

As a result of this corrective action process, the RCRA-HSWA program has begun to develop an approach very similar to that used in Superfund:

<u>RCRA</u>	<u>Activity</u>	<u>Superfund</u>
RCRA Facility Assessment	Environmental Problem Identification	Preliminary Assessment Site Identification
Corrective Action Decision	Determine public health and environmental impact; Assign priority	Hazard Ranking System
RCRA Facility Investigation	Study the problem in-depth and evaluate different remedies	Remedial Investigation/ Feasibility Study
Remedy Selection	Assure remedy is logged and meets other statute requirements	Record of Decision
Remedy Implementation	Clean up contamination	Remedial Design/ Remedial Action

Enforcement in the RCRA Program

The effective implementation of RCRA's regulatory programs rests on compliance with the rules and regulations developed under the Act. Facility inspections by Federal/State officials are the primary tool to determine compliance.

EPA and the States inspect TSDFs to make sure they are complying with their RCRA permits or interim status requirements. Region I conducted 24 inspections in non-authorized States in 1986; authorized States conducted 187 inspections of facilities. This exceeds the statutory mandate of inspecting 50% of the regulated universe each year (the regulated universe in Region I is 369 TSDFs, not including land disposal).

When violations are found, EPA or the State issues a warning letter or a compliance order, which specifies what the permit holder must do to remedy a violation, and may also assess a fine.

Region I States issued 67 Administrative Orders in 1986, and EPA issued 8 in non-authorized States. \$387,700 in fines was assessed to non-compliers. In serious cases, a permit or interim status may be revoked, and civil or criminal law suits may follow. Region I filed seven civil cases on behalf of State Agencies in 1986.

In addition, Region I began the first civil cases in the country against three facilities in Connecticut that were not in compliance with the loss of interim status (LOIS) regulations discussed earlier.

Significant Non-compliers

One of the highest enforcement priorities for EPA and State enforcement action is focused on "Significant Non-compliers." Facilities defined as significant non-compliers in the RCRA program are those land disposal facilities that have high priority violations (Class I) of groundwater monitoring requirements (Subpart F), closure and post closure requirements (Subpart G) or financial requirements (Subpart H).

Region I had 79 RCRA facilities in significant non-compliance at the beginning of 1986. Forty-five of these facilities (57%) were in compliance at the end of Fiscal Year 1986. Twenty-seven of the facilities had formal enforcement actions taken against them and only seven facilities did not have formal enforcement actions and remained in significant non-compliance at the end of the year.

RCRA Special Project Grants

In addition to providing grants to States to carry out the RCRA program, the RCRA staff in Region I also administers "one-time" grants to States for special projects. These funds were first made available to EPA in 1985 through a Congressional budget add-on to support two types of activities:

- 1) development or implementation of hazardous waste programs focused on innovative waste management activities such as waste reduction, waste exchange and alternatives to land disposal; and
- 2) acceleration of permit issuance to new or expanding facilities which provide alternatives to land disposal and thereby reduce the dependence on land disposal.

Region I decided to focus its funding efforts on assistance and education of small quantity generators (SQGs), considering this to be a Regional priority. Under HWSA, SQGs are now defined as those generators who generate between 100 Kg and 1,000 Kg per month of hazardous waste.

In 1986, funds again became available for these grants. Region I and the New England states committed the funds to moving forward on the work they had done previously on SQG projects.

Region I issued \$272,000 to States for six special projects in 1986. New England States conducted seminars, produced video-tapes and handbooks, and published listings of local testing laboratories or hazardous waste transporters available for small quantity generator use. The example below highlights the potential these projects have to reach SQGs who are often not aware that the law affects them.

The Cape Cod Planning and Economic Development Group received funds for a project designed to be completed in two phases, beginning in 1986. Phase I emphasized technical assistance to generators. Phase II will include establishment of a regional data base on hazardous waste generators and waste streams, work with SQGs to achieve compliance with disposal regulations and to reduce the volume of waste requiring land disposal. In 1986, they began conducting some of the 25 one-on-one site consultations and held several of the eight seminars with SQGs to explain State and Federal laws. Some of these seminars are "cluster" seminars which focus on a specific audience such as photography labs or auto-body shops. The on-site consultations are designed to help facility owners spot areas where they could make changes in their processes to reduce or recycle waste.

One of the short-term projects on Cape Cod involves development of "milk-runs." To encourage small SQGs to dispose of hazardous waste properly, licensed transporters periodically pick up the waste from SQGs on a specific route and transport it to a licensed RCRA treatment, storage or disposal facility. With the 1987 grant they will continue their previous work, and will conduct a feasibility study for siting a transfer station for hazardous waste.

Underground Storage Tank Program

In addition to the Waste Management Division's efforts to control today's hazardous wastes through RCRA, and clean up yesterday's improper waste disposal through CERCLA, we are beginning to require proper management of underground storage tanks containing petroleum products and chemical substances used as raw materials.

Recent estimates show there are approximately 150,000 underground storage tanks at 50,000 sites in New England. To understand the regulatory problem this number presents, consider that there are approximately 5,000 handlers of hazardous waste regulated under RCRA in Region I and 58 sites on the Superfund National Priorities List in Region I. The number of underground tanks falling under EPA or state regulations is 30 times higher than the number of RCRA facilities we are presently addressing. This means that EPA and the States cannot handle underground storage tanks in the classic way of doing business. We will have to rely heavily on outreach efforts and voluntary compliance.

As with many of the environmental statutes, Congress intended that States conduct the Underground Storage Tank (UST) program. Region I States were regulating Underground Storage Tanks before Congress mandated the development of Federal regulations and thus have a jump on the problem. Five of the New England States now have effective regulations in place for most tanks, and Vermont's

program will be in place in January, 1987. The Federal regulations addressing leak detection and leak prevention for underground storage tanks are being developed in EPA Headquarters and should be in place in 1988.

Notification

The first task mandated by law was called notification: owners of currently used tanks and tanks taken out of operation within the past ten years notified the designated State agency that they owned a tank or tanks. This notification procedure is complete in Region I and gives us an idea of the size of the problem.

Grants

One of the primary responsibilities of the Regional program is to provide grant monies to States for addressing the UST problem. In 1986, EPA issued \$120,000 in grant funds per State and laid the groundwork for new State grants for 1987. Grants in 1986 focused on managing the notification requirement, including printing and distribution of forms and educating tank owners about this effort, and continuation of State regulatory program development.

Special UST Projects

State grant projects in the UST program for 1987 will continue to focus on notification and program development. In addition, the Region will fund several special projects, including:

- ° in Maine, a grant to assist in documenting experiences of a "first in the country" tank installation certification board (focusing on one of the two largest reasons for tank failure);
- ° in Vermont, to study the need for, and possibly site on State-owned land, a landfill for contaminated soil from leaking tank site clean ups; and
- ° also in Connecticut, a study to help determine if EPA needs to regulate certain exempt tanks (small motor fuel tanks at farms and residences), supporting an upcoming EPA report to Congress.

The New England Interstate Water Pollution Control Commission (NEIWPCC) was one of the first multi-state coordinating committees to focus on the problem of leaking underground tanks. NEIWPCC was later selected by EPA Headquarters as the national coordinating group. They publish a quarterly bulletin called LUSTLINE and work on national outreach and education of tank owners.

In Region I, EPA has also focused on compliance with new regulations. In 1986, we started three enforcement cases, presently under investigation, against tank owners who did not comply with the Federal interim prohibitions regarding new tank installation.

HAZARDOUS WASTE MANAGEMENT IN NEW ENGLAND STATES

ALL DATA ON HAZARDOUS WASTE
GENERATED IN 1985 IS
PRELIMINARY DATA FROM THE 1985
STATE BIENNIAL REPORTS.

Progress at Superfund Sites in Maine

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
F. O'Connor	Removal of tanks, drums and their contents. Fence installed around site. Removal unilateral order valued at \$10,000.	Remaining tanks removed. Enforcement order for private party RI/FS signed. First round of field sampling complete.
McKin Co.	Alternative drinking water supplied by town. Liquid wastes removed. Surface tanks and drums and their contents were removed. Site fenced. RI/FS complete. ROD signed.	Pilot study of soil aeration successfully completed. Lagoon closed and filled. Buildings decontaminated and removed. Full soil aeration begun with about 6000 cubic yards treated.
Pinettes Salvage Yard	Contaminated soil removed.	Remedial Investigation ongoing. Three rounds of field sampling and surveying completed.
Saco Tannery Waste Pits	Wastes were neutralized, capped and a fence installed. RI/FS begun in 1985.	State conducting ongoing RI/FS funded by EPA through cooperative agreement.
Union Chemical Company, Inc.	Drums removed. Site was proposed on NPL Update and is not yet on final NPL.	State investigations and removal actions underway. EPA enforcement actions planned.
U.S. Navy NAS (Brunswick Naval Air)	Initial assessments identified 10 areas with possible contamination. Ground water, surface water and soil samples have been taken for study.	Scoping of RI/FS and RCRA Corrective Action underway with Navy.
Winthrop Town Landfill	Waterline installed under consent order with PRPs. RI/FS completed. Remedial actions will include capping, alternate water supply, and pumping and treating of groundwater if necessary.	Remedial design begun by PRPs under joint enforcement consent decree by Maine and EPA. Several designs reviewed and some are being revised. Surface debris removed.

The RCRA Program

<u>Tons of Hazardous Waste Generated in 1985</u>	<u>Tons Treated in State</u>	<u>Tons Disposed in State</u>	<u>Number of Regulated Generators</u>	<u>State/Country That Receives Majority of Waste</u>	<u>RCRA Program Authorization Decision</u>
9,136	1,053	0	348	Canada	Expected May 1987

The amount of waste reported generated in Maine has decreased since the 1983 report on hazardous waste generation (1983-10,211 tons). Almost 12% of the waste generated in the State is treated in Maine.

Maine has not been authorized to conduct the RCRA program but Region I staff in the Waste Management Division rely on the state to conduct the day-to-day business of the program, including inspections and enforcement cases, under grant agreements.

LCP Corrective Action Order

Region I's first Section 3008(h) Corrective Action Order was issued to LCP chemicals, Inc., a TSD facility located in Orrington, Maine. LCP will be conducting a RCRA Facility Investigation to characterize contamination emanating from land disposal and solid waste management units on-site. In the past, LCP and former owners used landfills for disposal of solvents and mercury bearing sludges. Concurrent with the Corrective Action Order, LCP was issued a 3008(a) order for violations of subpart F groundwater monitoring requirements, and assessed \$23,125 in penalties.

Portsmouth Navy Shipyard HSWA Permit

Region I is drafting a HSWA permit for the Portsmouth Navy Shipyard. To ensure public participation, an expanded community relations program has been developed. EPA has held two public workshops (August and October 1986) in Kittery, Maine to solicit public input and educate the public concerning HSWA. The topics of discussion included a detailed explanation of the HSWA permitting process, and an overview of the environmental investigations the facility may have to undertake.

As a result of these workshops, there has been heightened public interest in the HSWA permitting process, and the public is better informed of how the process works. Also as a result of our expanded efforts, the Maine Waste Regulation Section was recently invited to speak at the Portsmouth League of Women Voters general membership meeting on the draft permit.

McKin Site Case History

The McKin site is one example of the results possible in cleaning up a Superfund site once studies have been completed and a decision about the remedy has been made. The description below highlights previous efforts at the site and progress made in 1986.

The seven-acre McKin site, located approximately 15 miles north of Portland, Maine, is an abandoned waste collection, transfer and disposal facility which operated between 1965 and 1978. When organic chemical contamination was detected in nearby residential wells in 1979, an alternate water supply was built by the Town of Gray with a matching grant from the federal Department of Housing and Urban Development. Between 1979 and 1983, EPA removed all surface drums and tanks from the site, thus controlling any immediate public health hazards.

In 1985, the remedial investigation and feasibility study (RI/FS) were completed. The RI/FS determined the nature and extent of contamination remaining at the site and evaluated potential technologies to reduce any environmental or public health hazards. The studies identified volatile organic chemicals in the soil in specific areas on the site and contamination of the nearby aquifer.

In July, 1985, EPA announced its decision to attack both problems. For the onsite soil contamination, EPA chose to aerate the affected soils under controlled conditions. For offsite groundwater contamination, EPA decided to pump contaminated groundwater and treat it in a new treatment plant to be built at the site.

Shortly after EPA made its cleanup decision, two companies previously identified by EPA as potentially responsible parties (PRPs) offered to carry out the approved remedy. In August, 1985, EPA formally ordered these companies, Fairchild Camera and Instrument Corp. and Sanders Assoc., to begin cleanup activities including a pilot study for soil aeration.

The purpose of the pilot study, completed in 1986, was to investigate the effectiveness of one or more methods of aerating soil to allow volatile contaminants to evaporate.

This system, the first of its kind at a Superfund site, was designed to treat soil in an enclosed area while controlling the levels of air air pollutants in the air around the site. To ensure air emissions were controlled, an elaborate air monitoring system was designed for the site and nearby residential areas.

Data from five air monitoring stations around the site are continuously fed to a computer in a trailer at the site. Visual and audible signals will be produced if activities need to be modified to produce air contaminants. This continuous computerized monitoring network is the most comprehensive to have been used this way in New England.

In July, 1986 an Administrative Order was issued to the PRPs which compelled them to aerate solvent contaminated soils and prepare an excavation plan that would delineate the actual area of excavation

and level of contamination to be aerated. A total of 8500 cubic yards will ultimately be aerated with 3500 cubic yards left to complete. Drums filled with oily sludges and other wastes from earlier removal actions are being shipped to an EPA approved hazardous waste facility and will be off-site by November 1986.

To keep residents informed of activities at the site, EPA established a telephone hot-line. The hot-line gives periodically updated recorded messages regarding the site status and air quality monitoring, and records the caller's questions. In addition, throughout the decision process, the EPA project manager met with local officials and the public to share information and answer questions about activities and the cleanup at the site.

Progress at Superfund Sites in Vermont

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
Old Springfield Landfill	Alternate waterline installed - paid for by PRPs. RI/FS begun in 1984.	Waste seeps fenced and posted. Waste delineation investigation and feasibility study ongoing.
Pine Street Canal	Surficial coal tar wastes were solidified and removed.	Developing RI/FS workplan. PRP search ongoing.

The RCRA Program

<u>Tons of Hazardous Waste Generated in 1985</u>	<u>Tons Treated in State</u>	<u>Tons Disposed in State</u>	<u>Number of Regulated Generators</u>	<u>State that Receives Majority of Waste</u>	<u>RCRA Program Authorized</u>
11,580	0	0	351	New York	Jan. 1985

Vermont reported an increase of 56% in the amount of hazardous waste generated in the State since the 1983 hazardous waste report (1983 - 7,425 tons). All of Vermont's hazardous waste is stored in the state and then shipped to other States for treatment and disposal.

Vermont has eight facilities which will receive RCRA permits as either storage facilities or closures in 1987. Approximately 60% of all regulated generators in the State are inspected on an annual basis. State requirements are more extensive than Federal requirements under RCRA and include many standards that are required for storage facilities. These efforts focus on reducing the potential for environmental releases at facilities not regulated for storage, treatment or disposal.

Underground Storage Tanks

Vermont held public information meetings in every county in the State explaining the notification rules addressing underground storage tanks. Subsequently, the State has received and processed notifications from more than 2800 locations in the State and estimates there are 7000 underground storage tanks. After 18 months in development, the Waste Management Division in the State has also submitted proposed final regulations to the Legislative Committee on Administrative Rules. The rules call for secondary containment as the general rule for all new tank installations, and should be adopted by January, 1987.

Waste-end Tax

Vermont also developed and implemented a Waste End tax in 1985, based on the volume and destination of hazardous waste. Waste which is destined to be reclaimed, recycled or recovered for beneficial purposes is taxed at the lowest rate (.9 cents per pound of solid); waste destined for treatment is taxed the next highest; and hazardous waste destined for land disposal is taxed the highest (28 cents per gallon). This tax may provide the incentive to move State industries toward the RCRA goal of waste minimization, reuse or recycling of hazardous waste.

Progress at Superfund Sites in Connecticut

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
Beacon Heights Landfill	State provides bottled water to 2 homes with contaminated wells. RI/FS and ROD complete. Remedial action will include cap, extension of water supply and groundwater monitoring system.	Negotiations with committee representing most of 77 PRPs. Unilateral order issued to 31 PRPs to design and construct waterline extension.
Kellogg-Deering Well Field		RI/FS and ROD completed. Water treatment and distribution system will be done first. Letters notifying PRPs of actions issued.
Laurel Park, Inc.	Remedial Investigation begun.	Fence installation completed. Negotiations ongoing with PRPs for design and construction of waterline for 54 homes.
Old Southington Landfill		Reviewed technical proposal for State Order issued to the town of Southington. The Order is not yet being enforced.
Revere Textile Prints Corp.	Drums and contaminated soil were removed by the PRP.	
Solvents Recovery Services of NE	Initial studies of site predated formal RI/FS and ROD documents.	On-site groundwater recovery system constructed and began operation. Operation of off-site groundwater intercept system awaits State issuance of NPDES permit.
Yaworski Waste Lagoon	22 PRPs identified.	Remedial Investigation completed. Project funding constraints forced temporary slowdown. Feasibility Study began under new contract to EPA.

The RCRA Program

<u>Tons of Hazardous Waste Generated in 1985</u>	<u>Tons Treated in State</u>	<u>Tons Disposed in State</u>	<u>Number of Regulated Generators</u>	<u>States/Country Receiving Majority of Waste</u>	<u>RCRA Program Authorized</u>
176,100	47,106	16,284	701	Canada Pennsylvania New Jersey	Potentially 1987

Connecticut industries are among the largest generators of hazardous waste in New England. However, the waste is generated by a small number of regulated companies. The amount of waste generated by Connecticut industries decreased by 9% since the 1983 hazardous waste report (1983 - 193,725 tons). Connecticut is the only state in New England reporting that any significant amount of waste was reclaimed, recycled, or reused in 1985 (34,887 tons).

The state of Connecticut is also singled out among New England states by the large number (over 100) of land disposal facilities, primarily containing sludges from the treatment of metal finishing wastes. These "regulated units" under RCRA resulted from an early aggressive program by Connecticut to require treatment of these wastes prior to discharge. Until the November 8, 1985 deadline, these facilities routinely were allowed to place the wet sludges in unlined lagoons. The economic and regulatory requirements to file for and obtain permits to upgrade these disposal methods caused most facilities to stop operating their lagoons by the deadline and begin dewatering and shipping sludges out of state. The formerly regulated units are now being "closed" as required by RCRA (waste is being excavated and trucked off-site or the units are closing with waste in place).

During 1986, EPA also actively reviewed Connecticut's application for authorization to manage the RCRA program. Connecticut lost its interim authorization to manage the RCRA program which reverted to EPA in 1986. With the loss of Connecticut's interim authorization, the large number of land disposal facilities, and even larger universe of major facilities entering the corrective action process, the Connecticut Section has become the largest in Region I's RCRA program.

Several major issues were identified by EPA when the program reverted, including standards for "closure" of the land disposal facilities and requirements for timely and appropriate enforcement policy development. EPA outlined these deficiencies and entered into a letter of intent with the Connecticut Department of Environmental Protection (DEP) in April 1986 to bring the State program into conformance with the Federal regulations. EPA and DEP staffs have worked throughout the year to develop joint and similar procedures for reviewing technical closure plans and conducting enforcement actions with the goal of authorization early in 1987.

In 1986, Region I staff conducted many RCRA activities in Connecticut. Over 2300 letters were sent to Connecticut RCRA facilities to advise them of procedures under program reversion. The operating status and compliance with groundwater and financial requirements of all land disposal facilities in Connecticut were verified, resulting in the first three Loss of Interim Status (LOIS) enforcement cases in the country. Three permits were issued containing corrective action facility investigation requirements, among the first permits of this type in the U.S.

The Connecticut Section also completed Facility Management Plans for all land disposal facilities as the first step in the corrective action process. Information was received from facilities on old non-regulated units in response to RCRA Section 3007 information request letters sent to each facility. Due to staff constraints, similar letters were not sent to another 130 storage and treatment facilities, many of which have significant past disposal problems. The first group of these requests are being sent in December. We will screen the entire universe of storage, treatment, and disposal facilities in Connecticut to determine priorities for corrective action at facilities of greatest risk to human health and the environment.

Solvents Recovery Services of New England

The Solvents Recovery site shows the clean-up of environmental contamination possible after extensive studies are completed to determine the source and extent of contamination. The site is a good example of the EPA's efforts to ensure other environmental media are not affected in removing contaminants from a Superfund site. Solvents Recovery is also unique in that it predated the formal remedial investigation/feasibility study now under Superfund.

Solvents Recovery Services of New England (SRS) is a three-acre site located in Southington, Connecticut, approximately 500 feet west of the Quinnipiac River. Primary activities at the facility included the recovery of industrial solvents by distillation and the manufacture of a waste fuel blend for use in the cement industry. The facility operated from 1955 to the present.

In addition to being listed as a Superfund site, SRS has applied for a RCRA permit and currently has interim status. Since the mid-70's, the facility has operated as a solvent storage and treatment facility. Currently, no disposal of hazardous waste takes place at the facility.

Southington municipal water supply wells number 4 and 6 are located approximately 1350 and 1900 feet north of the site, respectively. Both of these wells were found to be contaminated with volatile organic compounds in September, 1976. Studies by EPA determined that groundwater contamination in well 4 and in other off-site areas was due to contamination by SRS.

A Consent Decree was signed in 1983 requiring remediation of groundwater contamination. The onsite groundwater recovery system began operating in 1986. The purpose of the system is to prevent off-site migration of contaminated groundwater and consists of a series of interconnected groundwater recovery wells on the downgradient edge of the SRS site. Extracted groundwater from the system is treated to remove volatile organics in an on-site air stripping tower. The treated water is then discharged to the Quinnipiac River.

With the on-site groundwater treatment system operational, the facility had to comply with other environmental statutes. Under the Clean Water Act, SRS was required to obtain a National Pollutant Discharge and Elimination System (NPDES) Permit in order to discharge the treated groundwater to the river. The permit requires SRS to submit monitoring results to the State and EPA bi-weekly. The monitoring results show the reduction in groundwater contaminants obtained through the system and the cleanup of environmental contamination.

NPDES monitoring reports submitted by the SRS show the decrease in contamination of the extracted groundwater by providing analytical results of samples taken prior to and after treatment in the air stripping tower.

The October report reflecting samples collected by the facility in July and August of 1986 indicates that 96.3% of total volatile organics were removed from the extracted groundwater before it was discharged to the river. SRS is also required to analyze for a limited number of individual volatile organic contaminants. For example, the monitoring report indicated that 100% of the benzene was removed from the water, and 95.7% of the toluene was removed.

The off-site recovery system consists of several wells connected to a common collection pipe. It has been constructed but cannot begin operating until a NPDES permit is issued also allowing this system to discharge treated water to the Quinnipiac River.

The two groundwater recovery systems do not represent the final action in environmental cleanup at the SRS site. Residual soil contamination not addressed by a Superfund action at the site will be covered by a RCRA HSWA permit. In addition, EPA is undertaking an evaluation of the performance of the groundwater recovery systems to determine if they are achieving the groundwater cleanup performance standards laid out in the Consent Decree.

Progress at Superfund Sites in Massachusetts

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
Baird & McGuire, Inc.	Contaminated soil was capped. Site is completely fenced. Initial remedial actions include demolition of two buildings, relocation of watermain and temporary capping of contaminated soil. Four PRPs identified.	RI/FS and ROD completed. Construction of waterline underway.
Cannon Engineering Corp. - Bridgewater	600 drums and hazardous waste removed. Part of Cannon's enforcement case.	RI/FS ongoing. Negotiations ongoing with PRPs.
Charles George Land Reclamation Landfill	Fence installation, cover and regrading of exposed refuse, and water supply. 376 PRPs identified. RODs for on-site work and waterline completed.	Wetlands assessment received and approved. Completed first information meeting with PRPs. PRP search ongoing. Waterline under construction. Cover design almost complete. Off-site RI/FS underway.
Groveland Wells 1 & 2	RI/FS completed. Supplemental source contamination investigations ongoing.	Wellhead treatment system under construction. Should be complete in Spring, 1987.
Haverhill Municipal Landfill		PRP search in progress.
Hocomonco Pond	RI/FS and ROD completed. 7 PRPs identified.	Consent Decree for design, construction and maintenance referred to Dept. of Justice. Revisions needed to comply with 1986 Superfund amendments.
Industri-Plex 128	Fence installed around site. RI/FS completed. 20 PRPs identified.	ROD completed.
Iron Horse Park	Cover over asbestos piles. Five PRPs identified.	RI/FS ongoing. Initial removal of PCBs from 6 catch-basins. Removal of clean steel and cement underground tanks.
New Bedford Harbor	Signs posted and playground has been fenced.	RI/FS ongoing. Dredging feasibility study also being conducted. Trial began for liability/damages to natural resources.
Norwood PCBs	518 tons of PCB contaminated soil removed. Liner over PCB soil contamination while sampling is completed. Nine PRPs identified.	Negotiations underway with PRPs for RI/FS.

Massachusetts

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
Nyanza Chemical	Fence installed. RI/FS and ROD completed to address sludges.	Remedial Design for sludges underway. ROD provides for groundwater and surface water diversion, consolidation and capping.
Plymouth Harbor/ Cannon Engineering	Tanks were drained and are currently clean. RI/FS and ROD completed. Part of Cannon's enforcement case.	Remedial design underway and remedial action to start in Spring of 1987. Negotiations ongoing with PRPs.
PSC Resources	Tanks were drained of over one million gallons and are currently clean.	State and EPA agreement being finalized for State lead RI/FS.
Resolve, Inc.	RI/FS and ROD were completed. Remedial action removing lagoon contents and contaminated soils (16,000 cubic yards) have been completed. 245 PRPs identified.	Supplemental Remedial Investigation being conducted to determine extent of soil contamination on-site and to address groundwater and wetlands contamination.
Rose Disposal Pit	Alternate waterline and fence have been installed. Soil contaminated with PCBs has been covered.	Feasibility study ongoing.
Salem Acres	Fence has been installed.	Negotiations underway with PRPs for them to conduct RI/FS.
Shpack Dump		Quarterly monitoring of residential wells by State.
Silresim Chemical Co.	All chemical wastes located in above-ground storage containers were removed by 1981. Site is fenced and has a temporary clay cap.	RI/FS ongoing; conducted by Silresim Trust, formed by 185 PRPs.
Sullivan's Ledge	Site has been fenced.	Remedial investigation is ongoing. Enforcement work began.
W.R. Grace & Co.	Large tanks were dismantled and removed. Aquifer restoration program underway.	Landfill, other waste sites, and lagoon closure RIs complete. Negotiations ongoing for final closure options.
Wells G & H	Wells were shut down due to contamination of drinking water. Drums have been removed and site fenced.	RI/FS ongoing.

The RCRA Program

<u>Tons of Hazardous Waste Generated in 1985</u>	<u>Tons Treated in State</u>	<u>Tons Disposed in State</u>	<u>Number of Regulated Generators</u>	<u>State That Receives Majority of Waste</u>	<u>RCRA Program Authorized</u>
209,543	154,530	158	4,894	New York	Feb. 1985

The amount of waste generated in Massachusetts in 1985 is almost double what was reported in 1983 (111,017 tons). At this time, it is difficult to determine where the increase lies, but an EPA study underway should determine if changes in reporting are responsible for the increase.

Almost 74% of the hazardous waste generated in the State is treated within the State, with .07% disposed of in the State. Massachusetts did not report that any waste generated in the State was reused, reclaimed or recycled.

An initiative of the Massachusetts Department of Environmental Quality Engineering (DEQE) in 1986 was the passage of penalty regulations and implementation of a penalty policy. This is a major step toward developing a "timely and appropriate" enforcement program and should result in a higher degree of compliance in the State.

DEQE continues its progressive education and outreach programs for the public and regulated community. A small quantity generator (SQG) committee has been formed to review Federal and State requirements and make recommendations for regulatory revisions and ways to increase SQG compliance.

Baird & McGuire Superfund Site

CERCLA mandates that the public be involved in decisions about Superfund sites. The Baird & McGuire site is an excellent example of the opportunities an EPA site manager has in the community relations aspects of the job.

The Baird & McGuire site, 20-acres in size, is located south of Boston in Holbrook, Massachusetts. The chemical mixing company located at the site was a formulator and batcher of soaps, disinfectants, floor waxes and pesticides/herbicides from 1912 to 1983. Approximately 100,000 gallons of hazardous materials were stored in various tanks at the site. Of the 129 Superfund priority pollutants, 102 have been found at the site. The town's wellfield has been contaminated by pesticides and volatile organic compounds. As a result, three water supply wells have been closed. Surface water is threatened, and dioxin has been found in wetlands at the site.

EPA conducted several removal actions to control imminent threats to public health. The first removal action was in 1984 where a breach in a creosote lagoon in heavy rains created an oil slick on the Cochato River. EPA removed 1000 cubic yards (50 truckloads) of contaminated soil, installed a ground-water recirculation system to prevent the contaminated groundwater plume from discharging into the river, temporarily capped and fenced part of the site, and closed sluice gates on Richardi Reservoir to prevent Cochato River water from entering the drinking water supply. A 5700 foot fence (over a mile of fencing) was also installed in late 1985 after dioxin was discovered at the site.

After stabilizing imminent threats at the site, EPA began a series of studies into the problems at the site to propose a remedy. The community became very involved in this process, beginning in June, 1985.

Active and interested citizen's groups encouraged the EPA site manager to go well beyond the general Superfund community relations plan, to educate and work with the community on site decisions. The press served to keep the community up-to-date on progress at the site.

The community submitted a list of seven requests to EPA at a meeting when the results of initial studies were discussed. The requests included: fence the entire site and post signs warning of hazards/ remove the buildings on the site promptly and install a fire alarm in the interim; divert the water main around the site; conduct a comprehensive testing program of the sediments in the Cochato River and all drinking water sources; and recognize residents of the community as official participants in the remedial process.

EPA responded to residents' requests and started Initial Remedial Measures (IRM) to meet these requests. Under the IRM, demolition of two buildings and the chemical storage tanks will be done. Relocation of the 12" water main began in July 1986, and highly contaminated soils will be capped.

A Citizen's Advisory Committee was formed, consisting of local members of the Boards of Selectmen and Boards of Health, the Fire Chief, environmental interest groups and local residents. The chairman of the committee is a State Representative and the co-chairman is a chemistry professor.

EPA's site manager attended bi-weekly or weekly meetings to present information about the site and answer questions. The meetings were open and covered by cable television.

Essentially, the site manager educated the citizens as to how decisions at the site are made. Speakers not involved in the project often made presentations at the meetings on subjects such as risk assessment and innovative technologies. When EPA released a report, the citizens knew what to expect. Citizens were informed of timelines and design plans; any decision EPA made, they influenced.

The final Record of Decision (ROD) was signed in September 1986, and requires a \$44.4 million "permanent" remedy. The remedy calls for incineration of contaminated soils, groundwater treatment and wetland restoration. This is the largest sum to be spent in the Region to date to clean up a site.

Monsanto Company Facility

In 1986, EPA focused on the integration of the RCRA and CERCLA programs to use the statute best suited to address a particular site or facility. The Monsanto Company facility in Springfield, Massachusetts is an outstanding example of breaking new ground through the use of RCRA at a facility that first was addressed under CERCLA. The facility is being addressed under RCRA for two reasons: 1) The Monsanto Company will be conducting the studies and cleanup of hazardous waste with EPA oversight — under Superfund this would be a "potentially responsible party" (PRP) lead site; and 2) The facility is seeking a Part B RCRA permit to allow storage of hazardous waste at the facility.

Corrective action under RCRA can be incorporated as a condition of the RCRA permit. Contaminated soils and groundwater will be cleaned up without using Federal Superfund dollars in the process, and conducting a lengthy enforcement case afterwards.

Work at the facility also exemplified cooperation between EPA and the State to address active hazardous waste facilities. The efforts of Massachusetts' Department of Environmental Quality Engineering and EPA led to more progress than had each organization addressed the facility separately.

The Monsanto facility, 400-acres, is the largest chemical manufacturing facility in New England, and one of the oldest in the area (operating for over 80 years). Fiberloid operated the facility beginning in 1904, manufacturing products such as brushes and piano keys from one of the earliest developed plastics. Monsanto bought the property in 1938. The site has various landfills with manufacturing buildings constructed on one of them, liquid disposal pits where benzene, toluene and offproduct have been dumped, leach fields where solvents have been disposed, four burning pits and cages, and several areas where manufacturing accidents have occurred (25,000 gallons of formaldehyde were spilled at one location).

The facility was originally addressed in 1982 and 1983 under CERCLA and a pre-remedial investigation was conducted. EPA and the State then issued a joint order in 1983 to require a remedial investigation and feasibility study (RI/FS).

Field work began on a three-phase remedial investigation in 1984. Phase I emphasized collection of information about prior history of the site and seismic work. Phase II of the investigation began in late 1984 and included geophysical work and ground penetrating radar to determine if there were buried drums on site. Monitoring wells were installed and sampling of groundwater also took place.

In 1986, Phase III of the study began. Sampling of groundwater, soils, sediments and surface water was conducted. Also, test pitting (digging into the ground with a large backhoe) to confirm the presence of buried drums and contents in the drums took place late in 1986. We are currently awaiting the Phase III report which will include choices for remediation. At this writing, Monsanto had spent \$1.5 million to study the rate and extent of contamination.

The corrective action provisions in the 1984 amendments to RCRA provide EPA with a strong tool to examine a facility tool to examine a facility through an integrated approach. We can now look at past and present waste practices and examine the manufacturing process when issuing a permit.

As a condition of the RCRA permit, Monsanto will be required to clean up past releases of hazardous waste. The permit to store waste on-site can then be revoked if Monsanto does not comply with any aspects of the permit, including the corrective action provisions.

The permit application from Monsanto is three volumes, in binders each about three inches in thickness. This permit application will have to be reviewed by EPA and the State as part of the permitting process. The Monsanto case emphasizes: 1) the importance of State involvement; 2) the importance of consistency across Regions in dealing with non-local companies; and 3) the similarities between the RCRA and CERCLA programs. EPA's Headquarters offices have also recognized this case as exemplary in corrective action and will use the work at the facility in the RCRA Facility Investigation Guidance Document.

Progress at Superfund Sites in New Hampshire

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
Auburn Road Landfill	Temporary relocation of residents.	Removal of drums began. Focused feasibility study completed for alternate water supply. ROD completed. PRP negotiations ongoing.
Coakley Landfill	Public water supply extended to several homes with contaminated wells. 6 PRPs identified.	RI/FS initiated.
Dover Municipal Landfill		RI/FS ongoing.
Kearsarge Metallurgical	Drums removed from site.	Remedial investigation by PRP is ongoing.
Keefe Environmental Services	Lagoon close to overflowing and was drawn down 4 times to prevent overflow. Lagoon now closed. Drums have been removed. Remedial investigation complete.	Draft feasibility study under review.
Mottolo Pig Farm	Drums have been removed. Three PRPs identified.	Site is not final on NPL.
Ottati & Goss/ Great Lakes Container Corp.	9000 tons of PCB contaminated soil and 3000 empty drums were removed. In court under Section 106/107 of CERCLA, with several PRPs.	RI/FS completed.
Savage Municipal Water Supply	Bottled water was supplied to residents. Met with PRPs and town of Milford to review draft workplan.	Completed workplan. PRP negotiations underway. Title search on properties underway.
Somersworth Sanitary Landfill		RI/FS ongoing.
South Municipal Water Supply		RI/FS ongoing by PRP.
Sylvester's	Drums removed. An emergency action intercepting and recirculating groundwater was installed to delay migration of contamination.	Groundwater treatment facility was started; has been in 24-hour operation since April, 1986. Part of Cannon's Enforcement case.
Tibbetts Road	Drums have been removed. Contaminated soils have been excavated. Waterline is being designed for adjacent residences.	Negotiations with PRPs ongoing for RI/FS.
Tinkham Garage	Permanent waterline installed.	RI/FS and ROD completed. PRP negotiations ongoing RD/RA. Part of Cannon's Enforcement case.

The RCRA Program

<u>Tons of Hazardous Waste Generated in 1985</u>	<u>Tons Treated in State</u>	<u>Tons Disposed in State</u>	<u>Number of Regulated Generators</u>	<u>States That Receive Majority of Waste</u>	<u>RCRA Program Authorized</u>
19,791	0	88	440	Ohio New York	Dec. 1984

The amount of hazardous waste generated in New Hampshire in 1985 was 59% higher than the amount of waste generated in 1983 (12,410 tons). Industries in the State dispose of 45% of the hazardous waste generated in the State.

In the fall of 1986, New Hampshire conducted six free public education seminars for hazardous waste generators across the state. Over 500 people attended the program which addressed the latest laws and regulations.

Household Hazardous Waste

In 1986, New Hampshire launched an active household hazardous waste collection program by authorizing the use of the New Hampshire Hazardous Waste Cleanup Fund for this purpose. Twenty-two collections were held last year, serving 648,373 individuals or almost 2/3 of the State. Each participating municipality raises matching fund monies for the project and conducts a public education campaign on the dangers and proper disposal methods for household hazardous wastes.

RCRA Enforcement Actions

New Hampshire fined two companies for RCRA violations including improper disposal on hazardous waste, and transporting without a permit and manifest.

RCRA Cleanups

Closure of a lagoon commenced November 18, 1985 at W.W. Cross, Jaffrey. In May, over 4,000 tons of sludge and 5,000 gallons of liquid were shipped to an Ohio landfill. Backfill and cover of the lagoon was completed August 8, 1986. The company submitted a closure certificate on September 22, 1986. The Division and company are currently developing a post closure plan for on-going monitoring at the site.

Sylvester Superfund Site

The Sylvester site in Nashua is an excellent example of the Federal/State/Local partnership that often develops during the process of addressing a Superfund site. EPA and the State entered into the first cooperative agreement funded under CERCLA to address the Sylvester site. The site also exemplifies the environmental results possible once a site has been fully studied and a remedy implemented.

Sylvester's Dump site is a 7-acre sand and gravel operation. The owner ran an illegal waste disposal operation, accepting household refuse, demolition materials, chemical sludges, and hazardous liquid materials. Thirteen-hundred 55-gallon drums were disposed of at the site, and records also show that over 900,000 gallons of hazardous wastes were discharged into a leach field, subsequently seeping into soils and contaminating over 100 million gallons of groundwater.

Several emergency actions were taken at the site. A security fence was installed by the City of Nashua around the drum storage area, and hazardous waste in approximately 1,314 drums was analyzed and shipped to an approved hazardous waste treatment facility for treatment and disposal. A groundwater interception and recirculation system was installed to temporarily contain the most heavily contaminated groundwater and prevent contamination from going into a nearby brook and river. This system effectively delayed migration of the contaminants until further action could be taken.

The final remedial actions at the site called for isolation, interception and treatment of contaminated groundwater. In 1982, a slurry wall surrounding the 20-acre site was constructed to reduce migration of contaminated groundwater. A synthetic membrane cap was also placed over the site to prevent rain water and snow melt from infiltrating the soils and combining with contaminated groundwater. The slurry wall and cap were constructed at a cost of \$2.4 million (90% paid by EPA, 10% paid by New Hampshire). A municipal water line has also been extended to potentially affected local

residents at a cost of \$140,000 shared by EPA, the State and the City of Nashua.

In April 1986, the treatment facility for contaminated groundwater became operational. Approximately 430,000 gallons per day of groundwater will be treated each day. As contaminated water is pumped from the ground, lime is added to raise the pH of the groundwater to remove heavy metals such as iron and manganese. The groundwater is further processed through a high temperature "air stripper" which separates the volatile organic compounds from the groundwater. These volatile organic compounds are then incinerated.

The flow is then split, with approximately 360,000 gallons per day being returned to the groundwater contained by the slurry wall and eventually treated again. The remaining 70,000 gallons per day receives further biological treatment, similar to treatment at a conventional secondary wastewater treatment facility, prior to discharge to a recharge trench outside of the slurry wall containment area. This sidestream is intended to induce groundwater flow into the slurry wall containment area, through the fractured bedrock below the site, thus preventing leakage out of the containment area.

EPA estimates that approximately 300 million gallons will have to be treated in this manner before contaminants in the groundwater are reduced to an acceptable level. We estimate the facility will need to operate for approximately two years (costing approximately \$1.5 million per year, 10% of which is paid by the State). After two years of operation, the treatment system will be evaluated to determine whether the treatment plant should be shut down.

The State conducts quarterly groundwater monitoring inside and outside the containment area to monitor the effectiveness of the slurry wall and the containment system. EPA is also actively involved in identifying the PRPs and recovering costs for the work at the site.

Progress at Superfund Sites in Rhode Island

<u>Site</u>	<u>Previous Accomplishments</u>	<u>1986 Accomplishments</u>
Central Landfill (Johnston Site)	PRPs installed monitoring network in response to State order.	Negotiations ongoing with PRPs to conduct RI/FS.
Davis GSR Landfill		Final listing on NPL. PRP search began.
Davis Liquid Waste	255 drums were removed. 17 PRPs identified.	RI completed; action memo for waterline drafted.
Landfill & Resource Recovery	Site stopped accepting waste in 1985. Most portions of the landfill have been capped.	RI started.
Peterson/ Puritan, Inc.	PRP independently installed interceptor well to control migration of contaminated groundwater.	Workplan completed for fund lead RI/FS. EPA will review work already done at site during RI/FS.
Picillo Farm	All barrels have been excavated and removed. RI/FS and ROD completed. 20 PRPs identified.	Negotiations ongoing with State before implementing remedy. Need reauthorization funds before proceeding.
Stamina Mills	Waterline installation complete. 3 PRPs identified.	RI/FS ongoing.
Western Sand & Gravel	Removal of liquids. RI/FS and 2 RODs completed. 150 PRPs identified.	Design underway for a water supply system. Consent Decree to collect past costs, cap the site and study groundwater contamination filed.

The RCRA Program

<u>Tons of Hazardous Waste Generated in 1985</u>	<u>Tons Treated in State</u>	<u>Tons Disposed in State</u>	<u>Number of Regulated Generators</u>	<u>State That Receives Majority of Waste</u>	<u>RCRA Program Authorized</u>
14,974	4465	0	1476	New York	Jan. 1986

Rhode Island facilities treat almost 30% of their hazardous waste in the state. The State continues to regulate all hazardous waste generators regardless of the amount of hazardous waste generated. The Rhode Island Department of Environmental Management also conducted several successful "Household Toxic Waste Clean-up" days during 1986.

Rhode Island has increased its use of administrative and criminal penalties as enforcement tools. The State is also beginning to computerize its manifest system which should prove to be a valuable aid during enforcement actions.

A great deal of effort was spent to authorize Rhode Island's RCRA program. In order to accomplish this task, Region I and Headquarters' staff had to evaluate various aspects of the State's program. This evaluation focused on compliance and enforcement, permitting, regulations, grant commitments, management, and reporting requirements. Upon completion of the evaluation, EPA determined that the State is running a capable program and therefore deserves final authorization. Rhode Island received Final Authorization to run the RCRA program in January 1986.

Derecktor Criminal Case

In late 1986 the largest environmental crimes penalty ever imposed in New England was levied against Robert E. Derecktor and his firm, Robert E. Derecktor of Rhode Island, Inc. The case is also a successful example of Federal/State cooperation in enforcement of environmental laws.

Robert E. Derecktor of Rhode Island, Inc. is a Rhode Island corporation doing business at a facility on Coddington Cove, Middletown, Rhode Island. Robert Derecktor is a shareholder, corporate director and president of the Rhode Island, Inc. and operated an industrial facility operation for ship repair and construction.

The Rhode Island Department of Environmental Management (DEM) investigated the case along with EPA. The company was charged with discharging abrasive blasting debris and other pollutants into Narragansett Bay, in violation of the Clean Water Act. The company pled guilty to 24 discharge violations.

The company also admitted it failed to notify EPA when removing asbestos, a violation of the Clean Air Act, and failed to notify EPA of a release of asbestos during ship repair operations, a violation of CERCLA (or Superfund).

Derecktor pled guilty to four violations of the Toxic Substances Control Act, including failure to mark transformers containing PCBs, improper storage and disposal of PCBs, and failure to maintain storage and disposal records. Derecktor's guilty plea related to the removal of three PCB-contaminated transformers from a drydock at the Rhode Island shipyard and burying them at his residence in Middletown, Rhode Island.

Derecktor could have received up to five years in prison and fines totaling \$725,000, and the shipyard could have received \$635,000 in fines. The penalties assessed in December, 1986 totaled \$675,000, with \$75,000 of that levied against Derecktor himself. The court suspended \$200,000 of the fine provided the company pay \$200,000 as restitution to the Rhode Island Environmental Response Fund.

FUTURE CHALLENGES

Future Challenges

The goal of the reorganization, and a major theme we will be addressing in the coming year, is program integration. These words will encompass much of the work we do in 1987. We are focusing not only on the integration of the Superfund and RCRA programs, but on the integration of all the environmental programs of EPA. This presents several challenges for us in the coming years.

One challenge is to address environmental problems while ensuring the goals of the all the environmental acts will be met. We now assess the impact of Superfund sites on wetlands, groundwater, and surface water, in addition to soils. In our cleanup remedies, we make sure that the contaminants we are removing from groundwater do not end up in the air. This is a challenge, to ensure that we are not transferring the contaminants at a Superfund site from one environmental medium to another. In the RCRA corrective action program, we will look at five media which may be affected by releases from manufacturing firms, and we will work to attain the cleanest possible environment in all media.

A challenge in implementing the corrective action provisions under RCRA will be to decide how much to rely on Superfund's experience. In many ways the staff in the Superfund program have addressed barriers the corrective action program may encounter. We are currently encouraging staff to move between the two programs, and share their experiences. We hope this will alleviate any problems similar to Superfund's first few years.

One technical challenge we face relates to our ability to detect contaminants in different media. This ability far surpasses our ability to understand what those numbers mean in terms of human health and damage to the environment. This in turn relates directly to our risk management and risk communication challenges. How can we communicate the risk to the public and help them understand what the numbers mean?

Another technical challenge will be to understand the risks we are facing. We need better ways to work with risk and risk-based decision making. We need to convey to the public that we don't live in a risk-free society and that we won't be able to give them zero-risk environment. This is the challenge: to convey to the public what we are doing and how long it takes. This is a difficult problem and this report is but one attempt to communicate how our programs work and what we have been accomplishing.

A new challenge is presented by the 1986 amendments to Superfund. Congress mandated a higher level of public participation, and we must maintain program continuity while factoring in the new amendments. We will have to review work under progress to ensure it meets the requirements of the new statute. In the amendments, Congress also mandated that sites be cleaned up permanently. This will mean that we need to develop new technologies.

Another challenge in the Superfund program will be to carry out remedies. In 1986, many things were put on hold because of the lack of reauthorization of Superfund and the unreliability of the funding situation. Now with the new amendments and 8.5 billion dollars, we will be able to focus on starting remedial actions where remedial decisions have already been made.

Specifically in the RCRA program, the challenge will be to do three things and do them all well: 1) overview existing State programs and help unauthorized States through the authorization process; 2) implement the corrective action program and see that work begins at priority facilities; and 3) maintain an enforcement presence. Our enforcement programs are the leverage we have to ensure that facilities which fall under the purview of the law, follow the regulations.

Another challenge for years to come will be to focus on the goals of the Resource Conservation and Recovery Act. We must begin to encourage waste minimization or recycling and reuse. If our programs are working, the cost of disposing of the waste will become higher, so that it will become economical for industry to reuse or not generate the waste initially.

In the Underground Storage Tank program our goal is to work closely with the New England States to build programs which will be implemented at the state level. By promoting leak prevention, encouraging leak detection and using the new Trust Fund resources wisely to clean up leaking underground storage tanks, we will continue our efforts to alleviate this major cause of groundwater contamination.