United States
Environmental Protection
Agency

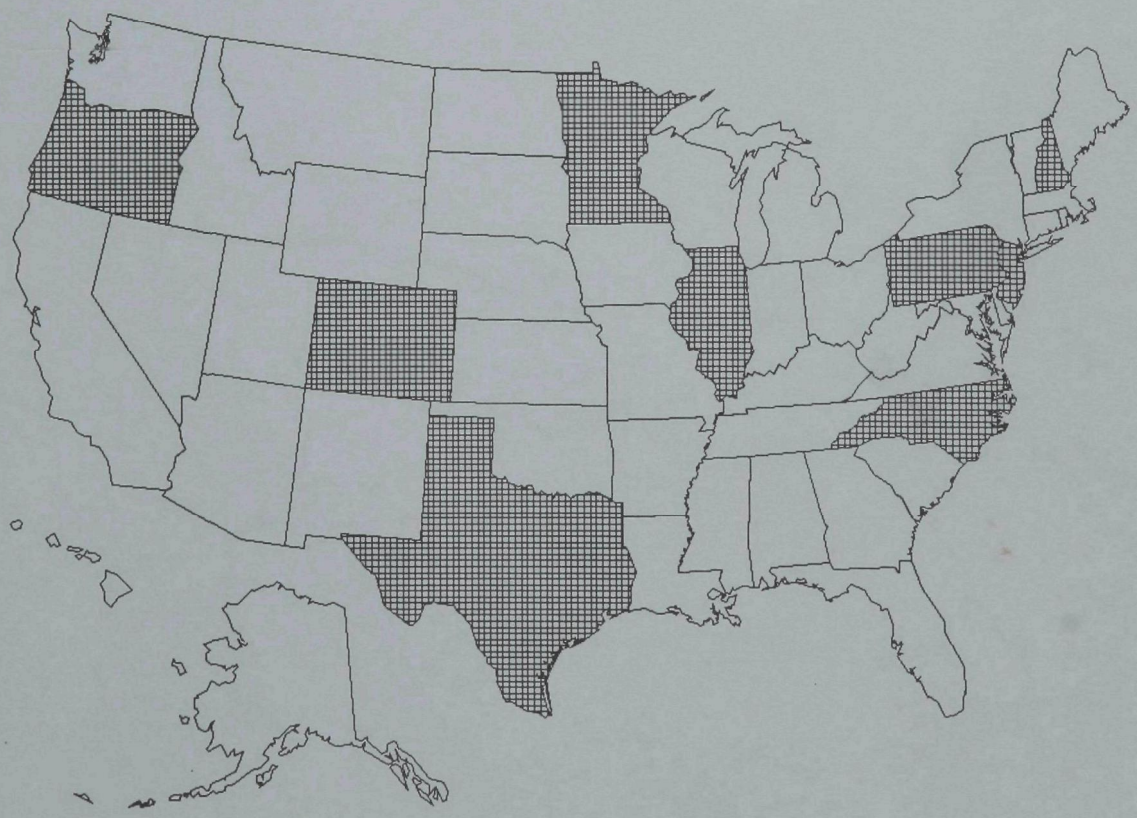
Policy Planning,
And Evaluation
(PM-220)

December 1990

EPA

Enhancing State Superfund Capabilities

A Nine-State Study



ENHANCING STATE SUPERFUND CAPABILITIES: Nine-State Study

A report by the Environmental Law Institute
to the Office of Policy, Planning and Evaluation
U.S. Environmental Protection Agency

December 1990

This report was prepared by the Environmental Law Institute under Cooperative Agreement CR-813617-02 with funding from the U.S. Environmental Protection Agency. Environmental Law Institute staff contributing to the report were Glen Anderson, Mary Becker, Fran Greenleaf, Laura Kosloff, Paul Locke, James McElfish, Michael Malacek, Jessica Mark, Andrew Moyad, and John Pendergrass. EPA staff were Harriet Tregoning, Charlotte White, and Richard Worden. The assistance of state program officials is gratefully acknowledged.

EXECUTIVE SUMMARY

Nine (9) state hazardous substance cleanup programs were studied in depth in 1989 to determine what elements of funding, enforcement, program organization and other factors are important to state capabilities. Those studied were Colorado, Illinois, Minnesota, New Hampshire, New Jersey, North Carolina, Oregon, Pennsylvania, and Texas. The states were selected to provide a cross-section of large and small programs, newer and older programs, geographic diversity, and special program features.

Findings of the study are reported in this volume in two parts. Part One synthesizes the results across states and draws conclusions concerning means of enhancing programs. Part Two reports on each of the states studied and shows how program features combine in the context of operating programs.

The principal findings of the study concern: goal-setting, funding, responsible party (RP) participation in conducting and financing cleanups, incentive mechanisms for RP cleanups, site management and staff organization, and program-wide approaches.

Goal-setting

State programs share the common goal of addressing risk from hazardous substance contamination. This goal is delineated in four (4) dimensions:

- the types of risks of concern
- the level of risk reduction achieved at each site
- the number of sites addressed
- the pace of cleanups.

State cleanup programs focus on one or more of these dimensions in setting priorities. These dimensions necessarily require trade-offs with one another. A state cleanup program that articulates which dimensions it deems of greatest significance is better equipped to marshal its resources. A program that neither articulates its goal nor attempts to select among the dimensions is less likely to be effective.

Funding

The balances in state cleanup Funds give only a general idea of relative program capacities. Direct comparisons among states based on Fund balance may overlook: the stability of the revenue streams supplying the Funds; the fact that some states fund staff and administration from their cleanup Funds while others do not; and the limitations and restrictions on the uses of state Funds imposed by statute, policy, or regulation.

More significant than Fund balances are the sources of Fund revenues. State Funds rely upon:

- bonds
- fees on hazardous waste activities
- appropriations from general revenues
- feedstock taxes
- business taxes
- fines and penalties
- interest

Bonds afford flexibility in demonstrating a credible threat of Fund-lead/cost recovery enforcement. Bonds also allow for the creation of a relatively large Fund, while spreading costs over a longer period. The existence of bond authority produces enforcement leverage even if bonds are not obligated.

Fees on hazardous waste activities appear to be important primarily for their secondary effects--discouraging certain types of waste handling practices, encouraging source reduction, etc. They appear to be capable of producing a modest amount of funding, but generally do not raise more than about $5 million per year even in fairly large state programs.

Feedstock taxes and business taxes are used only by a handful of states. They can provide substantial revenues, and are a stable funding source.

Appropriations from general revenues are a common source of cleanup funds, but provide a highly unstable revenue stream for state cleanup Funds. This revenue source provides maximum accountability to the legislature, but may result in diversion of funds from cleanup or recapture of funds for other legislative ends.

Fines and penalties are a common source of revenue, but cannot provide substantial funds.

Interest on Fund balances can be highly important in stretching a Fund. It has a significant revenue potential, but this potential is inversely proportional to the use of the Fund. Therefore, cleanup Funds that are highly dependent upon interest are somewhat frozen. This weakens their effective enforcement leverage as well as their availability for large-scale removal actions.

Many states have statutory restrictions on, or prerequisites to, the uses of cleanup Fund monies. These tend to weaken the enforcement leverage of the Funds by making the threat of Fund-lead action less credible, or by deferring the possibility of such action.

RP Participation

All state programs depend significantly on RP participation for site investigation and cleanup. Given the number of sites and the limited availability of public resources, all programs seek to increase RP participation through enforcement mechanisms and incentives.

Although all programs depend on RP participation, quantitative comparisons of RP participation rates in different states cannot be made with an acceptable level of confidence. Some states appear to have a "high" RP participation rate because they have no realistic Fund-lead or orphan site program. Others may have a "low" rate precisely because they have chosen to focus efforts on risky sites which have insolvent or recalcitrant RPs. There are numerous other factors accounting for RP participation "rates," including what number states elect to use as the denominator of the fraction--e.g. the whole universe of suspected sites, or those cleanups in progress.

Conclusions may be reached concerning factors that tend to increase or decrease RP participation, and their enforcement "cost" to the state. Factors that tend to <u>increase</u> RP participation with little detriment to the state are:

- a credible threat of Fund-lead/cost recovery (which depends both on having an adequate size Fund, and on reasonably rapid access to the Fund)
- strict liability (which limits litigation issues and encourages more rapid settlement)
- joint and several liability
- cleanup order authority
- sites with fewer RPs (which makes settlement easier)

Somewhat weaker factors that also tend to <u>increase</u> RP participation with little detriment to the state are:

- punitive damages (could be significant, but rarely exercised)
- clear deadlines for action
- publicity on site contamination
- the spectre of RP transaction costs
- sophisticated RP representatives (improves negotiation)

Other factors may increase RP participation, but with a "cost" to the state. These are:

- mandatory requests for "voluntary action," and requirements to "exhaust" remedies provided by the cleanup statute or other statutes before state programs may use enforcement authorities or Funds. (These tend to encourage delay).
- mandatory allocations of proportional liability
- "caps" on liability for "volunteers"
- unsupervised or weakly supervised cleanups
- "settlement first" requirements in the statute

Several factors do not appear to increase RP participation and have a cost to the state:

- preenforcement review of study orders or cleanup orders
- limitations on a program's choice of enforcement tools

Incentives to RP Cleanup

In addition to the enforcement-related tools discussed above, many states have learned that RP participation and funding of cleanups may be increased by use of non-enforcement tools and incentives. The strongest of these link site assessment and/or cleanup to transfers of property. Property transfer-based mechanisms take three forms:

- required approval by state for a transfer of property involving an industrial site (e.g. New Jersey Environmental Cleanup Responsibility Act-ECRA)
- disclosure requirements on transfer of property (e.g. Illinois Responsible Property Transfer Act)
- lender-required audits or assessments.

All of these mechanisms make use of the fact that when parties desire to consummate a transaction for business reasons, they have an incentive to rectify potential obstacles to the transfer (such as the state voiding the transfer in the case of ECRA, the transferee backing out of the deal in the case of the disclosure laws, or the lender refusing the financing). Thus, states focusing on these transactions have identified "pressure points" that may be more effective in obtaining privately-financed assessment and cleanup than any enforcement-based approach.

All of these approaches can add substantial RP resources to cleanup efforts apart from a state's "cleanup" program. Additional incentive mechanisms include:

- voluntary preliminary assessment (PA) programs that site owners may elect to participate in to remove the stigma of having a listed site
- "developer site" programs that allow sites slated for development to undertake certain assessment and cleanup activities on an expedited basis
- financial assistance from the state to RPs in the form of loans or credits
- publicity
- use of permit bars/permit revocations at other sites.

Program Organization and Site Management

Organization of site discovery, performance of site assessment, screening of sites, site investigation, remedy selection, and remedial action can be carried out in various ways. Performance is enhanced when a state matches its organization to its identified goals.

Site management involves the coordination of staff resources. Sites may be managed by states in three different ways:

- Remedial program manager (RPM)/ contractor approach--the site is managed by a single RPM with contractor support.
- Team approach--the site is managed by a multidisciplinary team, which follows it through the entire process.
- Expert approach--the site is primarily managed by an individual, who consults other staff members with relevant expertise on the stages of cleanup. The individual, in turn, serves as an "expert" with respect to relevant phases of sites managed by others.

The study reveals that the team approach and the expert approach offer significant advantages over the RPM/contractor approach in terms of continuity, staff development and morale, and effectiveness.

Enhancing State Capabilities

A state's site discovery program may be appropriately organized as:

- passive
- passive supplemented by property transfer

- active

- targeted active

Each of these approaches has differing resource needs and outcomes. An active approach is more desirable early in a program's life cycle. It may allow the identification of the universe of sites, can be supported before substantial resources are devoted to remedial construction at multiple sites, and may provide the foundation for legislative addition of greater resources if the universe discovered is substantial. The passive approach appears to be desirable only after use of one of the other three discovery methods. The targeted active approach focuses on natural resources or contaminant types of concern, and so provides a cost-effective prelude to risk reduction.

Site assessment and remedy selection also requires a normative choice by the state cleanup program, based on the goal dimensions it has identified. The four paradigmatic strategies (overlapping in some state programs) are:

- Ubiquitous risk--an attempt to accomplish some risk reduction at all identified sites.

- Queue--complete and permanent remediation of sites in turn, in the order in which they are ready for remedial construction.

- Cost/risk--the greatest risk reduction at the least cost (or given a fixed amount of resources); this may result in numerous removals, or a few large remedial actions, depending upon risk.

- Passive--voluntary RP cleanups accepted if offered.

The ubiquitous risk approach has significant equity advantages, but may not result in permanent or complete remedies. The queue may not reach all sites if resources are insufficient, and does not attempt to optimize risk reduction (except to the extent to which the sites are placed in the queue by virtue of a screening process and the priority is maintained). The cost/risk approach has significant efficiency advantages, but may produce equity problems if it does not address a significant number of sites or produce sufficient geographic distribution. The passive approach is usually pursued only when a program lacks a credible size cleanup Fund and/or has weak enforcement authorities.

A state program may credibly elect any of the four discovery approaches, and any of three assessment and remedy selection approaches (not passive). There is no "prescription" for a "capable" state cleanup program. Rather, any evaluation of state "capabilities" must ask (1) whether the program's site discovery, assessment and remedy selection choices match its identified "goals"--viz. risk type, risk level, number of sites, pace of cleanup, and (2) whether these choices are supported by sufficient resources to carry them out. The critical resources for this inquiry are a stable Fund, authorities that increase the likelihood of RP cleanup, and effective staff organization.

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INTRODUCTION

Historically, states have had an important role in addressing the nation's hazardous waste problems. State involvement has encompassed both participation in federal cleanup efforts and administration of state remediation and corrective action programs. The state role appears to be expanding at this time. Several new state cleanup programs have been created recently and many existing programs have increased funding and staffing levels. These developments provide an opportunity for states to take on greater responsibilities in the federal cleanup program and to expand the scope of state cleanup efforts. Based on an analysis of programs in nine states, this report suggests ways of enhancing state program capabilities.

I. THE STATES' ROLE IN HAZARDOUS SITE CLEANUP

Participation at National Priority List Sites

The centerpiece of the national hazardous waste cleanup effort is the federal Superfund program. Created by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Superfund[1] program has relied on state involvement in the cleanup process since its inception in 1980. Ten years later, the state role in the Superfund program is still evolving.

States are responsible for discovering inactive hazardous waste sites and conducting the Preliminary Assessment/Site Investigation (PA/SI) to characterize site risks. PA/SIs are financed by the Superfund program through Cooperative Agreements (CAs) and are used to determine which sites require immediate attention and/or should be listed on the National Priority List (NPL) to undergo longer term remediation pursuant to CERCLA. During its first six years, CERCLA did not provide states a substantive role in the review and selection of remedies for sites on the NPL, even though states were required to pay 10% of the remedial action costs and most of the Operations and Maintenance (O&M) costs at

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1. Throughout this report, "Superfund" is only used to refer to the federal program or to the federal Fund. While state programs may have comparable authorities and funds that can be used for the same purposes as the Superfund, we will refer to the state counterparts as the state "cleanup" program and the state "fund".

Fund-lead sites. The state role in remedy selection expanded considerably with the enactment of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Section 121(f) of SARA calls for "substantial and meaningful involvement by each state in initiation, development, and selection of remedial actions to be undertaken in that State." EPA's proposed revisions to the National Contingency Plan (NCP) in 1988 included policy options to allow NPL sites to be "deferred" to states to facilitate more rapid cleanup and conserve federal funds. Amidst growing controversy over this additional expansion of states' role at NPL sites, the EPA Administrator told a Senate committee in June, 1989 that EPA would "defer on deferral."[2] The NCP was promulgated without deferral provisions. Nevertheless, many states remain deeply involved in federal cleanups, often assuming "state-lead" at NPL sites under cooperative agreements with EPA. Others are pursuing their own strategies at NPL sites or aggressively pursuing control of remedy selection at these sites, occasionally in conflict with EPA.

State Cleanup Programs

State involvement at NPL sites pales in comparison to the challenge of cleaning up or compelling responsible parties (RPs) to clean up non-NPL sites. NPL sites currently constitute less than 5% (1228) of the estimated 32,500 sites potentially requiring attention.[3] Even though many of these non-NPL sites may require less time and resources to clean up on a per-site basis in comparison to NPL sites, the cleanup task is formidable and will extend into the next century. Most states have cleanup programs for inactive or abandoned sites. These programs vary widely in size, scope, funding, and legal authority. Many state cleanup programs address hazardous waste problems at facilities regulated under Subtitles "C", "D", and "I" of the Resource Conservation and Recovery Act (RCRA) in addition to the universe of abandoned and inactive non-NPL sites.

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2. For a discussion of this controversy, see U.S. General Accounting Office, Hazardous Waste Sites - State Cleanup Status and its Implications for Federal Policy, August 1989 (GAO/RCED-89-164).

3. Fewer than half of the sites potentially requiring attention have gone through the PA/SI process and been evaluated for listing on the NPL. Under EPA's new PA/SI policy, many of the remaining sites will be screened out before the final stage of the site investigation process.

State Cleanup Capabilities

While the preceding discussion suggests that there is a large potential role for states in addressing hazardous waste problems, it is more difficult to describe or assess state cleanup capabilities. Some programs have annual Fund additions of $50 million or more and staffs of several hundred people and can therefore address a larger number of sites than can other state programs with annual funding of well under $1 million and staffs of less than 20. Whether a state can be said to possess sufficient cleanup "capabilities" depends partly on (1) how "cleanup" is defined, (2) the number of sites requiring remediation, (3) the time frame for completing cleanups, and (4) the level of risk mitigation desired or attempted at each site. Thus, two state programs with dissimilar funding and staffing levels may both be quite capable of addressing their hazardous waste problems if the magnitude of problems or the cleanup goals are also quite different. While the level of program funding and staff resources are critical factors affecting state capabilities, there are other important determinants of capabilities, particularly the manner in which these resources are used to obtain private involvement in cleanups.

II. OUTLINE OF THE REPORT

This report examines state cleanup capabilities and provides two types of analyses of the factors that affect capabilities. Part 1 of the report describes and analyzes various types of funding mechanisms, statutory authorities, policies, and regulations that have been used by states to support their efforts to address hazardous waste problems. It relies on the analyses of nine selected state cleanup programs (Part 2 of the report) and, to a lesser extent, on the Environmental Law Institute's recent report for EPA, An Analysis of State Superfund Programs: 50-State Study[4]. Part 1 consists of six chapters. Chapter One provides a discussion of program goals and describes the linkages among program goals, cleanup and enforcement activities, and resource constraints. Chapters Two through Five examine public funding approaches, the role of RPs in cleanups, policies that augment the cleanup process, and organization and coordination of program resources, respectively. Chapter Six presents integrated approaches for meeting state cleanup goals.

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4. EPA/540/8-89/001 (September 1989).

Part 2 of the report consists of in-depth analyses of nine representative state cleanup programs. The states studied included those with large programs and small programs, widely varying staffing patterns, differences in program goals, and varying ages of the state cleanup program, as well as geographic distribution. These state studies provided an opportunity to examine program elements in an integrated way, focusing on how individual elements complement others, and how, in combination, the various program components define the state's cleanup capabilities. The nine state programs examined were those of Colorado, Illinois, Minnesota, New Hampshire, New Jersey, North Carolina, Oregon, Pennsylvania, and Texas.

PART ONE

CHAPTER ONE
CLEANUP GOALS

As noted in the Introduction, state cleanup capabilities vary considerably. These differences can be attributed in part to funding and staffing levels. But cleanup capabilities also depend on the types of goals state programs set, and on how resources are allocated to the various types of activities comprising the cleanup process. This chapter provides a discussion of types of state program goals, and illustrates the tradeoffs among different goals. It also briefly examines the linkages between program goals, on the one hand, and resource needs, legal authorities, and program organization, on the other--serving as a bridge to the analysis in succeeding chapters.

I. OVERVIEW

In the most general terms, the overarching goal of the state cleanup programs studied is to address risks from hazardous waste contamination. While this general statement of purpose is ubiquitous in state statutes, states may find it useful to further refine or clarify this goal to facilitate program organization and help a program allocate funds and assign staff to various tasks. Examples from the 9-state analysis illustrate some refinements made by states: achieve site cleanups that are adequate to protect public health and the environment, with priority placed on remedying sites that are underway rather than starting work on new sites; investigate all potential hazardous waste sites and remedy those sites that pose a "serious" threat to the public health and welfare; take action at sites on the state's priority list using cost-effective cleanups, preferably emphasizing permanent remedies; or mitigate environmental and health risks at all sites, with cleanup to background contamination levels if attainable.

Refinements of the general goal can be delineated in four distinct dimensions:

- the *types* of risks of concern,
- the *level* of risk reduction achieved at each site,
- the *number* of sites addressed, and
- the *pace* of cleanups.

Although these dimensions are discussed separately in subsequent sections, they are in fact inextricably linked. For example, if the program uses a priority list to screen sites for remediation, the number of sites to be addressed depends largely on how the ranking system is set up. Also, there are inherent tradeoffs and conflicts if a program decides to prioritize in a single dimension. For example, if a program emphasizes cleanup to background at every site, it may have to adjust its expectations about the number of sites it can address over a given time period and how long it expects each cleanup to take.

II. TYPES OF RISKS

There are a number of different types of risk associated with hazardous waste contamination. Risks are typically categorized as either public health or ecological, to distinguish between risks to humans as opposed to plants and animals. A third category--welfare damages--identifies contamination effects on property and other economically valued commodities. Risks can be further distinguished in terms of whether they are current or potential. These risk categories are further refined below:

- Human health risks:
  - individual vs. population or sensitive subpopulation
  - acute vs. chronic
  - carcinogenic vs. non-carcinogenic
  - by media (e.g., ground water, surface water, air, sediments, and soil)
- Environmental/ecological risks:
  - risks affecting or threatening ecosystems
  - destruction of sensitive habitats
  - irreversible environmental damage
  - threats to wildlife, especially endangered species
- Welfare damages
  - crop or drinking water loss due to contamination
  - materials damages to buildings and other structures
  - effects on property values
  - lost recreational opportunities

Most states do not indicate which risk categories are of greatest importance when articulating overall program goals. However, risk priorities may be revealed by the way certain activities in the cleanup process are defined. For example, if the program relies on complaints or referrals to discover sites, this approach gives weight to current, known health and welfare risks. Criteria for listing or ranking sites also may indicate the relative importance of different types of risk. Several states use the federal hazard ranking system (or a modified version), which emphasizes human health risks, to screen sites for the state priority list. Generally, state programs emphasize health risks over environmental risks and welfare damages, and known releases or current risks over potential or uncertain risks. Some states emphasize protection or remediation of important state resources such as groundwater or critical surface waters.

States' selections of risk types to address can drive their allocations of funds, their enforcement strategies, their staffing and organization, and their prioritization of site and remediation activities. While a state's choice of risk type for focus is often reflexive, it controls many other decisions.

III. LEVEL OF RISK REDUCTION AT EACH SITE

States may set goals based on the level of cleanup desired at each site. "How clean is clean" is probably the second most contentious issue in cleanup programs after liability. Generally, environmental groups and neighboring residents advocate cleanup policies that emphasize strict numerical standards and/or cleanup to background, while responsible parties favor cleanup policies guided by flexibility and the balancing of potential risk reductions against the costs of remediation. In goal-setting for state programs there has been little discussion of differentiating cleanup policies at different sites. For example, in setting program goals, a state could apply different standards depending on whether human health risks are current or potential, or whether human health as opposed to ecological risks are involved. In part the states' silence on differential policies could be due to over-arching statutory mandates that imply all risks must be addressed without regard for prioritization. Yet, a numerical standard, such as a maximum contaminant level (MCL), that is based on human health risks may not be appropriate if only ecological risks are involved

(either lower or higher standards might be appropriate depending on the nature of the risks).

Of the nine states studied, seven have articulated risk reduction policies. These policies fall into one of four categories: (1) site-by-site risk assessments, with some numerical standards for certain contaminants and exposure paths; (2) state numerical cleanup standards; (3) cleanup to background, and (4) federal NCP cleanup standards applied to state sites. These differing risk reduction goals affect program resource allocation.

IV. NUMBER OF SITES REQUIRING REMEDIATION

In general, state programs will be unable to address all hazardous substance sites and must set goals defining the number of sites to be addressed over a specified time period. The number of sites that need attention depends, in part, on what types of risks are deemed important and the thresholds that trigger site investigation and remediation. In setting goals for the number of sites to be addressed, a program must take into account the level of cleanup required because that affects the resource requirements and the time required to complete remediation at a site. Also, the program must recognize that the number of sites addressed does not necessarily correlate with the aggregate reduction in risks. For example, focusing program resources on selected sites may result in larger reductions in aggregate risks than spreading the same resources across all known sites.

At the present time, most states have a large backlog of sites requiring assessment and/or remediation. States are limiting the number of sites that will be cleaned up in various ways. Some limit action to those sites on the NPL. Others have established state priority lists or inventories. Still others maintain no formal inventory but simply work on those sites already identified to the extent resources are, or become, available. These variations in approach lead to widely varying definitions of the "size" of the overall hazardous site problem, and to significantly different demands for funding and staffing resources.

V. PACE OF CLEANUPS

State cleanup programs also set goals in terms of how quickly site cleanups are conducted. The pace of a cleanup is important because of risks that may be incurred until the cleanup is completed and the effects on the cost and/or technical feasibility of cleanup if there are delays. Pace can be affected by a number of factors: the thoroughness of site investigations and feasibility studies leading up to the selection of a remedy; the duration of negotiations with responsible parties; the complexity of the remedial design and construction phase of remediation; the availability of staff time and funds for oversight of investigation and remediation activities; statutory "exhaustion" requirements, mandatory "notice and negotiating" periods with RPs, review and approval of state program decisions by state boards or commissions, public comment periods, and litigation in states that allow preenforcement review of agency decisions.

Two of the nine states studied emphasize speed in achieving cleanups. In one of these states, the program relies chiefly on interim responses to the contamination, with complete remediation requiring more time. In most of the states, the pace of cleanup is strongly dependent on the enforcement schedule and/or the availability of funds for state-lead cleanups. One state takes voluntary cleanups if offered but does not impose cleanup obligations and schedules on RPs. These differences in approach to pace appear to be driven by (1) the availability of resources and (2) the presence or absence of statutory enforcement tools or limitations on enforcement authority.

VI. STATE GOAL SETTING

The chapters that follow discuss the program elements of funding, enforcement, incentives, and program organization. All of these, like program goals, affect the dimensions of states' programs. Yet these resource and authority issues need not control a state's program. In effect, goal-setting (if clearly articulated and pursued) can result in choices leading to reallocation of these resources, or their supplementation by state legislatures or responsible party cleanups. Indeed, similarly situated states with differing goals may have significantly different programs. The goal-setting process has, however, been slow to develop in state programs (as it has in the federal program).

Goal selection profoundly affects the focus of state programs and their capacities. For example, programs that place a priority on the types of risk to be addressed can achieve a relatively high level of capacity if they tailor site discovery and other activities to the types of sites of most concern. For example, they may focus on urban areas or on drinking water aquifers. Programs focusing on the level of risk reduction at each site may lead either to a removal-based program or to a permanent remedy approach. These require differing resources and staff organizations. Programs focusing on addressing a large number of sites must organize enforcement differently from those limiting the sites. And programs concerned with pace must make choices that trade-off certain of the other goals.

No state program treats all of these goals equally. It is important, therefore, in assessing resources and program capabilities to identify which goals are being emphasized and why. If a state's current emphasis is entirely dictated by its existing staffing pattern or funding level, it is clearly in a state's interest to attempt to define its goals on other grounds just to see whether resources can be better deployed. That is, resources should ordinarily serve a state program's goals, rather than vice versa.

CHAPTER TWO
FUNDING

Funding sources and funding levels exert a profound influence upon the potential effectiveness of state cleanup programs. Forty-eight states have some kind of fund for cleanup or emergency response activities at hazardous sites, and fifteen states have more than one such fund. Funding mechanisms vary considerably among states, and often contrast with the federal program. For example, some state Funds receive no appropriations, while others are entirely dependent upon appropriations. In contrast with the federal Superfund, only a very small number of state Funds derive revenues from a feedstock or other targeted tax.[5] Also, many of the state Funds have significant restrictions or limitations on uses of Fund monies. This chapter analyzes the funding mechanisms used by states and their advantages and limitations for meeting program goals.

The nine states in the study all have "superfunds"--that is, monies set aside for the purpose of remedying sites where hazardous substances have been released. Fund balances range from $256,000 (North Carolina's Inactive Hazardous Sites Cleanup Fund) to $450 million (New Jersey's two cleanup funds plus $300 million in bond authority). Excluding bond sales, annual revenues to the Funds range from $0 (North Carolina) to $50-75 million (Pennsylvania and New Jersey). Revenue sources include fees on generation and disposal of hazardous waste, specific taxes, appropriations from general revenues, interest on fund balances, penalties, and cost recoveries. Table 2-1 identifies the Funds for the nine states, their balances, and their revenue sources. (All of these Funds also receive revenue from cost recovery, which is not listed separately.) The range of revenue sources and Fund balances for the nine study states is representative of the fifty states analyzed in ELI's 1989 study of state superfund programs for EPA's Office of Emergency and Remedial Response.

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5. The federal Superfund is funded by a combination of excise taxes on petroleum, chemical feedstocks, and imported chemical derivatives; environmental taxes on corporations; and general appropriations.

TABLE 2-1

STATE SUPERFUNDS

State	Fund(s) and Balances	Revenue Sources	Revenues
Colorado	Hazardous Substances Response Fund **$5 million**	• Solid waste disposal fees • Interest	• $1.35M annually • 7% (@ $350,000/yr.)
Illinois	Hazardous Waste Fund **$4.25 million**	• TSD fees	• $2.1M annually
	Clean Illinois Fund **$2.5 million**	• Appropriations	• $2.5M annually
	Build Illinois Program **(bond fund)**	• Bond debt paid by used car sales tax	• variable
Minnesota	Minnesota Environmental Response, Compensation & Compliance Fund **$13 million**	• Appropriations • Hazardous waste generator tax • Penalties • Interest	• $1-1.5M annually • $1M annually • variable • variable
New Hampshire	Hazardous Waste Cleanup Fund **$1.9 million** (incl. bond issue)	• Hazardous waste generator fees and TSD fees • Penalties • Hazardous materials transportation permits • Interest • Bonds	• $357,000 annually • $212,000 annually • $220,000 annually • not credited • authority exhausted
New Jersey	Spill Compensation Fund **$68.8 million**	• Transfer tax on hazardous substances and petroleum • Interest, Penalties, Cost Rec.	• $21.9M annually • $6M annually
	Hazardous Discharge Site Cleanup Fund **$76.7 million** (plus bond authority)	• Appropriations • Bonds	• $225M appropriated over 5 years • $300M bonds authorized
North Carolina	Inactive Hazardous Sites Cleanup Fund **$256,000**	• Appropriations • Interest • Transfer of excess over $500,000 from Emergency Response Fund	• $600,000 (FYs 1987-89) $0 (FY 1989-90) • variable • $0
	Emergency Response Fund **$360,000**	• RCRA penalties	• variable

TABLE 2-1 (continued)

State	Fund(s) and Balances	Revenue Sources	Revenues
Oregon	Hazardous Substances Remedial Action Fund **$4.5 million** (plus bond authority)	• TSD fees • Civil penalties • Bonds Bond debt serviced by: -hazardous substance fee -petroleum fee -solid waste tipping fee	• $4.5-5M/biennium • $173,000/biennium • Bonds=10x fees Fees capped at $1M/yr/fee
Pennsylvania	Hazardous Sites Cleanup Fund **$32 million**	• Capital stock and franchise tax • Appropriations • Hazardous waste management and transportation fees • Interest	• $30M annually • $15M annually • $5M annually • $2.75M annually
Texas	Hazardous Waste Disposal Fee Fund **$12 million**	• Hazardous waste disposal fee • Penalties • Commercial TSD fees • Interest	• $7M annually • varies • $1M annually • $1M annually
	Spill Response Fund **$557,000**	• Appropriations	• varies

Note: Cost recovery is a revenue source or potential revenue source for all of these Funds. It is not shown separately (except in New Jersey where its contribution is relatively consistent) because (1) it represents a replenishment of funds originally derived from another source, and (2) its annual contribution is often highly variable.

Note: Fund balances shown as of mid-1989.

I. REVENUE SOURCES

Fund balances give some idea of the capacity of state cleanup programs to accomplish remediation and to exercise leverage to stimulate RP cleanups. Yet merely knowing the balance available to a state program at any given time reveals little. Specifically, state cleanup Funds may have similar balances, but completely different capacities. For example, in one state, the balance may not be carried forward from year to year; in another, the Fund's revenue streams may fluctuate; in still another, the reported balance may reflect an all-time high based on slowness to spend Fund monies but be unrepresentative of the amount typically available. More important than Fund balances is the reliability of revenue streams replenishing the Funds. What is their capacity to meet state programs' NPL obligations (CERCLA match and O&M costs) and funding requirements for non-NPL sites?

A one-to-one comparison of state Funds is also misleading because of the different purpose for which they may be used. Some states pay their administrative expenses (salaries, supplies, overhead) out of their cleanup Funds, while others use the superfund cleanup Fund only for cleanup actions and pay administrative expenses out of general appropriated revenues or EPA grants. Thus, for example, while Pennsylvania has annual Fund income of over $52 million, approximately $14 million of that is to pay for staff and administration of the program. In contrast, the North Carolina Fund is not used for administration. Colorado's Fund is not usable for administration except for an amount not to exceed 5% of the Fund balance. These differences lead to some difficulties in comparing the size of Funds and annual revenues.

Other issues are also important. For example, do the revenue sources of the cleanup Fund serve any secondary goals? (e.g. encouraging waste reduction, discouraging importation of out-of-state waste, encouraging substitution of non-hazardous feedstocks, etc.). Do these secondary effects serve to conserve the Fund in the long run? Are they important for other reasons?

State Fund revenues come from the following sources:[6]

- bonds
- waste generation, disposal, or transportation fees
- feedstock or fuel taxes
- taxes on business or industrial activities
- appropriations from general fund
- fines and penalties
- interest on Fund principal
- grants from EPA
- cost recovery

These various revenue sources for state cleanup programs have advantages and disadvantages for meeting program goals (such as maximizing the number of sites addressed, the pace of cleanup, or the extent of cleanup). Some also have secondary or incidental effects. The revenue sources are discussed below. Table 2-2 at the end of this section summarizes revenue sources and their characteristics.

Bonds

A number of states have partially funded their cleanup programs with bonds. In all, twelve states use bonds for at least part of their cleanup funds. No state, however, relies entirely on bond funding. Every state with cleanup bonds also has a fee-based or other type of direct revenue source. Of the nine states considered in this study, four--Illinois, New Jersey, New Hampshire, and Oregon--use bonds as part of their cleanup Funds.

Bonds have the advantage of producing a significant amount of money for use at one time while repayment of principle and interest is spread over a longer period. As a result, they are an ideal way of (1) creating a credible threat of Fund-lead remediation (with the potential for assessing punitive damages) to encourage RPs to conduct cleanups;

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6. Transfers, relied on in some states for funding, are not treated separately here but are linked to their original source of revenue. Thus, North Carolina's Inactive Hazardous Sites Cleanup Fund, which may receive transfers from the Emergency Response Fund, is credited with being funded partially out of RCRA penalties--the source of the latter fund's revenues.

or (2) providing money to meet large near term contingencies that can't readily be financed out of current revenues.

Bond-funded programs are, however, more costly than programs funded out of current revenues or through accumulated revenues. The pay-out includes both principal and interest. Thus, over the long term, a bond fund can be a costly approach.[7] In those states with bond funding and other revenues, the preferred approach is to use the other revenues first. The bonds are held in reserve, because once obligated, the interest begins to run. New Jersey, with its $300 million bond fund, has left the fund entirely untouched. Staff in New Jersey's Department of Environmental Protection believe that the existence of the fund demonstrably affects RP willingness to settle (even at large sites) because they know the state has the capacity to act. But the state has no need to obligate the bonds if it can obtain cleanup through either settlement or use of its non-interest-charging funds. A bond fund can put "muscle" into an enforcement strategy.

The most difficult aspect of bond funding is establishing a revenue source for the debt service. Illinois funds its bonds out of the proceeds of a tax on used car sales. Declining revenues from this tax have threatened the capacity of the bond fund. Interest and principal on Oregon's bonds are funded by hazardous substances fees, petroleum delivery fees, and solid waste tipping fees (i.e. disposal fees). The state evidently concluded that the $3 million per year that could be raised from these fees would go further if used to finance $30 million in cleanup bonds than if credited directly to a Fund. Bond funds could be useful in those states with small funds but with a few large, high-cost sites.

The long term costliness of bond funding may be overcome if a state actively pursues punitive damages recoveries. The bond fund can be used as a "club" to drive RP settlement; but if it must be used, a punitive damages recovery can overcome the interest cost. The result may be that observed in New Jersey--little need to use the bond funds, and few treble damage cases because of settlements. The ability of a state to recover prejudgment interest may also reduce the costliness of this approach.

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7. This costliness is mitigated to some extent by the disparity between the bond interest rate and the occurrence of inflation. It may be that a state can benefit from the deferral of payout until 20 years in the future. The spread between the interest rate and the inflation rate may be enhanced by the fact that most state-issued bonds carry lower interest rates than privately-issued bonds because of applicable state and federal tax exemptions.

Bond programs also entail administrative costs. If they are properly structured, the programs may be handled through the states' revenue departments (for example as in the Illinois program). However, the mechanism for funding the interest and principal payout may require significant staff resources.

Fees on Hazardous Waste and Solid Waste

Nineteen states use fees as major sources of revenue to their Funds. Three other states use fees as minor revenue sources. In addition, several other states impose taxes[8] on waste generation and use the proceeds for state superfunds. Of the nine states in this study, seven impose fees on hazardous waste generation, transportation, or disposal, or solid waste disposal, as superfund revenue sources. Only North Carolina, which relies on appropriations, and New Jersey, which relies on a number of funding sources including a transfer tax on hazardous substances and petroleum, do not use fees.[9]

Fees are important more for their impact on behavior than as substantial revenue sources. Indeed, fees generate revenues ranging from only $0.4 million to $7 million annually for the seven state Funds. The median is $2.1 million/year. This is generally consistent with the results of the fifty-state study.[10] Of the fifty states, only two--Texas and Massachusetts--collected in excess of $5 million in annual receipts from fees. (They received $7 million and $6 million, respectively). Staff from the Pennsylvania program articulated why their legislature had placed a cap on fees for hazardous waste management and transportation at $5 million per year. They concluded that the industrial base of the

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8. In total, 22 states use fees or taxes on waste generation or disposal activities or businesses as a revenue source. The differences between fees and taxes are sometimes subtle. In general, fees are levied on the regulated industry and relate to activities of that industry. Fees also tend to represent a charge on pollution, or for mitigation services. Taxes may be levied on a different basis than fees. Often, taxes are levied on income, property values, or specific produced inputs or outputs. Administration of taxes may be vested with the state treasury or revenue department, necessitating transfer of funds to the cleanup program. In contrast, fees may be collected directly by cleanup programs in some states.

9. Minnesota taxes hazardous waste generators. This is similar to a fee for hazardous waste generation, because it applies to the volume of waste produced.

10. An Analysis of State Superfund Programs: 50-State Study (September 1989), Table III-7.

state would not support a higher addition to marginal costs, and that insufficient revenues could be raised by further reliance on fees. This reasoning probably explains why other states do not raise a great deal of money through fees as well.

Thus, as a vehicle for raising revenues of up to $5 million, fees on waste-related activities are fairly well-suited. For greater amounts, they do not appear to have sufficient potential, based on our survey of state practices.

Fee-based revenues are also somewhat costly to generate as they require significant administative outlays. This is particularly true if the fee is imposed on a large number of entities (as, for example, a hazardous waste generation fee). Administrative expenses may be lower if the fee is collected from a smaller number of entities (e.g. from hazardous waste TSD facilities). Expenses may also be lower if the fee can be administered in connection with a pre-existing program (e.g. in the state's department of revenue, or in connection with pre-existing reporting obligations).

Fees can be most useful in influencing company behavior. That is, the imposition of a waste handling or disposal fee can serve as a disincentive to production or disposal of the waste. The Pennsylvania fee schedule was expressly constructed to that end. Pennsylvania charges the greatest amount per ton for hazardous waste disposed on land, less for treatment of hazardous waste, and nothing for recycling of hazardous waste. It also establishes a detailed fee schedule for transportation of hazardous wastes to various types of facilities. If the fee schedule operates as expected, it should influence the path of the waste stream and discourage waste generation where it is economically efficient to do so. For example, the Pennsylvania fee is more clearly directed at behavior rather than at revenue raising than most state fees. Of the $5 million in fees generated annually, up to $4.1 million is available for grants or loans: $2 million is available to companies for waste minimization and recycling grants; $2 million is available to municipalities where hazardous waste facilities are or will be located; and $100,000 is available for loans to RPs to facilitate cleanups.

Obviously, however, if fees are successful in changing behavior, the revenues from such fees will necessarily decline. The Fund may become a victim of its own success. Other factors can also be important. Colorado imposes its fee upon disposal of solid waste; it projects that the advent of recycling will depress the revenues flowing into its superfund in future years. A number of the state statutes have provisions that allow the environmental

agency to adjust the fee schedule to increase (or maintain) the revenues generated by fees for precisely this reason (e.g. Pennsylvania, Texas; but not Colorado).

Those fees likely to have the most success in influencing behavior are those related to the quantity of waste generated or handled. In contrast, assessment of fees on "TSD facilities" or "transporters" simply by virtue of their function, are more like business occupation taxes or general income taxes, which are either passed through to customers or partially absorbed. "Tipping" fees or "hazardous waste generation" fees have a more direct relationship to the activity at issue, and may provide an economic incentive to firms to make incremental reductions in generated waste.

Secondary effects of waste fee systems may be to influence the movement of, and location for disposal of, wastes. For example, states that impose fees for disposal of hazardous waste encourage their waste generators to ship waste out-of-state and discourage the entry of other waste for disposal (even if the fee is non-discriminatory). In contrast, generator fees are likely to encourage source reductions, but may not affect disposal location. Indeed, generator fees may have the effect of discouraging waste generation in-state while allowing waste from out-of-state to absorb the excess disposal capacity created in-state. Generator fees may also encourage the relocation of waste-generating production out-of-state while not reducing disposal in-state. New Hampshire has attempted to address this problem by imposing a hazardous waste generation fee on in-state generators, and a TSD fee for disposal of out-of-state waste in-state.

Feedstock Taxes

New Jersey uses a transfer tax on hazardous substances and petroleum as the primary source of revenue for its Spill Fund. Such taxes are fairly uncommon as revenue sources for state Funds.

The level of funding generated by such a tax may fluctuate if waste minimization and other efforts lead to a reduction in the use of hazardous substances, and the impact of the tax itself may lead to a reduction in the revenue base. The inclusion of a petroleum tax, however, provides greater stability to a Fund reliant on feedstock taxes because of the relative inelasticity of demand for petroleum within the price range marginally affected by a relatively low tax rate. In contrast, states reliant primarily on chemical feedstock taxes

may experience reduction in revenues due both to the effect of the tax on substitutions, and the ease of relocating production activities and use of such feedstocks to other states.

Use of a feedstock tax on hazardous substances may reflect perceived equities in the distribution of revenue burdens for the cleanup of hazardous sites. In effect, the argument runs, the producers and users of hazardous substances of today should bear part of the burden for the releases of hazardous substances disposed of in the past; there is a presumed commonality of financial interest (viz. some of the same companies are affected), and a cultural ethic fixing responsibility on a portion of the community. The fairness of this approach and the extent of an actual identity of interest between current users and past disposers has been debated at length (including prior to the enactment of SARA in 1986). The issue cannot be empirically resolved because (1) actual commonality of financial interest varies company by company and state by state, and (2) the cultural component is at least as important as the economic one in a decision to enact the tax.

In general, a hazardous substances feedstock tax can provide only a portion of the revenue needed for state Funds, and its secondary economic effects will need evaluation by any state considering its use.

Taxes on Business

Pennsylvania is the only state in the study that partially funds its superfund by a tax on the business community not linked to use of certain products or disposal of certain wastes. Its Capital Stock and Franchise Tax was a previously existing tax on businesses providing a substantial part of the state's annual revenues. One-half mill of the 9-1/2 mill tax has been diverted by the legislature to the state's cleanup Fund.[11]

Revenue from this source is similar to general fund revenues, except that (1) the dedication of a specific millage to the Fund assures a steady level of funding not dependent upon annual appropriation, and (2) taxing the business community results in a different distribution of the ultimate burden to the public. It is impossible to determine whether the distribution is more or less equitable than general income taxes or sales taxes.

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11. A "mill" is 1/10 cent. A tax expressed as a mill rate is 1/10 cent tax per dollar of value of what is being taxed; put another way, a one-mill tax is a tenth of a percent tax. The half-mill Pennsylvania tax devoted to the cleanup Fund switches on or off depending upon the prior year's expenditures and the year-end balance in the Fund.

An advantage of this type of tax over other Fund revenue sources is that it tracks the general economy of the state. The state pays for what it can afford, but does not target a particular sector.

Such taxes do not influence behavior related to waste disposal unlike feedstock taxes and waste fees.

Appropriations

Appropriations from the general fund are a major source of revenue for nineteen states' Funds, and in five of the nine study states. Appropriations are a major revenue source both in states where the Funds are small (e.g. North Carolina) and in some states with substantial Funds (e.g. Pennsylvania, New Jersey). Appropriations are not used at all in some states with historic aversions to taxation (New Hampshire, Colorado, Texas).[12]

Appropriations from the general fund are not as reliable as funding with designated sources. Appropriations may be cut, conditioned, or altered. Public expectations are not the same for appropriated funds as they are for designated sources. Where revenues are truly targeted, they are viewed as belonging to the program. It is more difficult for a legislature to divert an existing self-funded superfund than it is to refuse to appropriate a given amount of money in any year. Funds that depend upon appropriations are also susceptible to cuts if they are not depleted each year. Where a Fund is seen to accumulate monies, it is difficult to maintain the impetus to appropriate general funds (for which there is much competition).

Appropriations are most useful in states with relatively stable tax bases and healthy economies. In states where funds are tight, often a targeted fee or tax is preferable in order to provide a stable source of funding. Bond issues may also provide an alternative to appropriation-based funding (or a safety net to avoid the consequences of fluctuations). The vulnerability of appropriation-based funding is evident in the case of North Carolina, where no funds were appropriated for the 1989-90 biennium, thus leaving the state with no recourse if RPs decline to settle (because the Fund balance is too low to conduct a remedial action at even one site). On the other hand, appropriations are an important supplement to other revenue sources in the Pennsylvania and New Jersey programs. Neither

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12. Texas does have modest appropriations for its Spill Response Fund, but not for its superfund program.

of those programs depends upon appropriations, but the availability of such funds provides more flexibility in coercing RP settlements and in responding to situations where state funds are needed (e.g. for orphan sites, and removal actions).

Appropriation-based funding serves no secondary function, in contrast with fees and, to a lesser extent, feedstock taxes.

Fines and Penalties

In general, fines and penalties are minor revenue sources for state cleanup Funds. Assesments and collections on an annual basis are not reliable enough to serve as a steady income source. Moreover, the amounts generated by fines and penalties are ordinarily well under $1 million per year--particularly if the penalties are limited to those for waste violations (rather than including air and water pollution).

In its 1989 survey of possible funding sources, North Carolina's Governor's Waste Management Board rejected penalty-based funding at least in part because of a concern that "use of enforcement penalties to meet funding needs could impart the impression that the enforcement policy was influenced by the need for funds." Such concerns have not impeded the legislatures of 38 other states, which have authorized the use of fines and penalties as partial funding sources for their state cleanup Funds.

Virtually no Fund of reasonable size relies on penalties except as a minor revenue source.

Interest

Interest can be an important component of state Funds. Seven of the nine study states credit interest on their Funds to the Fund.[13] Only Oregon and Illinois do not do so. Interest is of particular importance in Colorado, where it now accounts for approximately 26% of annual revenues to the Fund. If not for the interest component, and deferral of expenditures in order to maximize interest receipts, Colorado's Fund would be unable to meet its CERCLA match obligations.

In most states, interest on state Funds is credited to the general fund absent legislative direction. Interest on state cleanup Funsd provides one way of increasing

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13. New Hampshire, one of these seven, recently determined that it had failed to credit interest to the Fund as provided by law.

amounts targeted to cleanup activities. However, if a Fund must rely on interest in order to meet its obligations, it can become difficult to spend Fund monies even where most desperately needed. The state agency may be forced to hoard its resources in order to maximize interest. This may produce a perverse chain of events: a state lacking sufficient monies in its Fund may refrain from expending those monies in order to increase interest receipts. As a result the Fund increases, and is perceived by the legislature and the public as (1) large (i.e. probably adequate), and (2) not needed (because it is not being expended). This condition may produce a reduction by the legislature of other revenues entering the Fund, or create difficulty in persuading the legislature that additional revenues are needed (e.g. Minnesota).

EPA Assistance

Some states rely heavily on EPA grant funds for administration of their programs. State programs that rely on this source as their primary source of funding, however, are in general ill-equipped to deal with cleanup of non-NPL sites because most EPA assistance is targeted to management of the NPL program. The most flexible of the state program support grants, the Core Program Cooperative Agreement, is limited to $250,000 per year. EPA provides support for PA/SI work at discovered sites. However, most of these sites are rejected for listing on the NPL and then must be handled with state resources if they are to receive any further attention.

However, most EPA grants are targeted to work on NPL sites. States receive multi-site and single site cooperative agreements to pay the federal share of remediation costs at state-lead NPL sites. Some federal monies are also available through Management Assistance Grants for state oversight activities.

Cost Recovery

Cost recovery, which is provided for by all states, is also potentially significant. It is not a revenue source of the same type as the others. That is, it replenishes certain program expenditures that can be recovered from responsible parties, rather than serving as a continuing revenue stream or enlarging the Fund. (It may, however, enlarge the Fund if the state has an active program for recovery of punitive damages). The utility of cost recovery depends upon: the state's ability to spend funds, the use of Fund monies at sites

where there are solvent RPs, and the state's enforcement approach. If a Fund is designed to deal primarily with orphan sites (or if such sites are a priority for the state), then cost recovery is likely to be less frequent. On the other hand, if a state has a substantial number of sites with RPs and without RPs, it may make sense from a financial perspective to expend funds first on sites with RPs, so that cost-recovered dollars may then be spent on the orphan sites. (A preferred scenario would be RP-funded cleanups on all sites with viable RPs, thus preserving the Fund for use on orphan sites.)

Obviously, programs with cost recovery capabilities are likely to be more efficient than programs that lack such capabilities. A state must coordinate Fund expenditures and planned cost recoveries to ensure Fund monies are available when needed. Few states have undertaken such planning efforts, and cost recovery remains an adjunct function or afterthought in most programs.

TABLE 2-2
FUND REVENUE SOURCES

Revenue Source	# States (50 State)[1]	# States (9 State)	Characteristics
Bonds	12	4	• Expenditure flexibility • Large $ • Stable revenue source • Enforcement effects
Waste Fees	29*	7	• Indirect effects on behavior • Moderate revenue potential
Feedstock Taxes	2	1	• Limited indirect effects • High revenue potential
Dedicated Business Taxes	1	1	• Stable revenue source • High revenue potential
Appropriations from General Fund	36	6	• Accountability to legislature • Unstable revenue source
Fines & Penalties	38	6	• Low revenue potential
Interest on Fund	16	7	• Moderate revenue potential • Inversely proportional to use of Fund for cleanups

* 22 states with "fees" plus 7 states with generator or disposal "taxes."

1. 50-State data from An Analysis of State Superfund Programs: 50-State Study, EPA/540/8-89/011 (Sept. 1989).

II. USES OF FUNDS

State cleanup Funds have numerous limitations and designations of uses. Some are limited to emergency response (Wyoming), others to study and design (Utah), others primarily to the CERCLA match (Colorado). In other states, the Funds may be used for a multiplicity of purposes: site identification, RP searches, site assessment, emergency responses, removals, remedial actions, victim compensation, loan funds, grant programs, etc.[14]

"Restricted use" Funds limit a state's flexibility in dealing with hazardous sites. Restrictions often include requirements that other sources of funding or remediation be exhausted prior to expenditure of the state Fund. While such a restriction is logical, some of its manifestations in the states produce peculiar results. For example, in Texas, the Spill Response Fund cannot be used unless the state has exhausted its other funding options including those under the Solid Waste Disposal Act (which includes the state's Hazardous Waste Disposal Fee Fund); this means that the Spill Fund is sometimes not available even where the flexibility of that Fund would be advantageous in dealing with emergency situations. In Pennsylvania, the Hazardous Sites Cleanup Fund is only available for remedial actions if the state has pursued an elaborate notification and negotiation procedure (except for interim responses). This has led to the state relying more heavily on interim responses. In general, legislative prescriptions of preconditions to the use of state Funds vary little from what prudent state administrators would do in any event. However, the inclusion of these prescriptions in law may make it difficult to develop a flexible response where, for example, state monies are needed as a prod to a recalcitrant RP. States that lack preconditions, such as New Jersey, have substantially more flexibility and thus bargaining leverage vis-a-vis RPs.

Some state Funds are used for administrative costs while others may not be used for such purposes. For example, the Pennsylvania program is funded entirely out of the Hazardous Sites Cleanup Fund, while the North Carolina staff is funded by general appropriations and EPA grants, rather than from the Inactive Hazardous Sites Cleanup Fund. The Illinois program's administrative costs come from the "Clean Illinois" Fund.

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14. See Table III-8, An Analysis of State Superfund Programs: 50-State Study (Sept. 1989).

There does not appear to be a significant difference among programs based on whether their administrative funding comes from the state Fund or not. This factor is highly important, however, in analyzing Fund adequacy or making cross-state comparisons.

III. HOW ARE FUNDS MADE AVAILABLE FOR USE?

A number of states impose additional conditions to the expenditure of monies already contained in their Funds. A few require legislative "appropriation" of the monies from the Fund to the designated use. Such a requirement appears to be designed to maintain legislative control over the purse strings. It may be quite practical in connection with CERCLA matching fund requirements, particularly where the amount required is large and the state budget is not. Such a requirement is more problematic where it applies to state non-NPL sites where the agency may be in negotiation with RPs. The state agency is less able to use the "club" of possible expenditure and cost recovery if the RP knows that it must go through an appropriations procedure.

Illinois is one state that has a special appropriations requirement--the agency must obtain legislative approvals for expenditures in excess of $1 million at a site. The agency has circumvented this requirement, however, by either using money in its bond fund (which arguably contains no such stricture) or by simply expending money based on the approval implied in the legislature's appropriation of monies to the Fund. Oregon requires the agency to obtain approval of a legislative committee in order to use monies in its new Orphan Site Account (bond fund). Oregon has not yet had any experience with this provision. New Hampshire may expend its Fund monies only with the approval of the governor.

IV. EVALUATION OF THE ABILITY OF FUNDS TO MEET CLEANUP NEEDS

The task of assessing the adequacy of a state Fund to satisfy its cleanup needs is very difficult, requiring considerable information on the magnitude and timing of the demand and supply of funds. The information required to assess Fund adequacy includes the following:

(1) accurate projection of CERCLA match requirements (timing, amounts, and potential cost recoveries);

(2) site discovery expenditures to identify non-NPL sites potentially requiring remediation;

(3) completed site assessments for discovered sites;

(4) accurate projection of likely fund needs for the assessed sites, including a determination of the likelihood of private funding of cleanups; and

(5) analysis of the revenue streams and changes in cash position of the Fund (i.e. assessing both revenues and capacity of the Fund to handle periods of high demand).

The assessment of these five factors is complicated by the period of time over which "adequacy" is to be assessed. Long-term needs and costs are quite difficult to project given the uncertainty of site discovery, the need for remedial investigations of the sites, the variability of cleanup costs, and the uncertainty of responsible party participation in cleanups. The site discovery issue is one that is program-driven; some programs place a low priority on site discovery, making the assessment of fund adequacy less costly but also incomplete. Also, given the time required for processing a site from discovery through remediation, few programs can accurately assess the magnitude of future O&M costs.

Some of the study states have undertaken efforts to project Fund adequacy. The majority have performed assessment of at least a few of the factors noted above. For example, Colorado has analyzed (1), (4), and (5) for CERCLA matching obligations. North Carolina has assessed its needs, but is relying heavily on "voluntary" cleanup efforts by RPs to make up for the lack of state funding (see Chapter Three). Other states have performed analyses of varying degrees of specificity. New Hampshire, for example, is hampered by weak fiscal controls and poor site identification efforts. States in which legislatures meet every two years (e.g., Oregon), will often prepare short term projections of funding needs to justify budgeting requests.

Any state program should be able to do an analysis of its Fund and funding needs based on the five (5) factors above. Such analysis should be more sophisticated than a "back-of-the-envelope" estimate; and should be capable of being updated on a regular basis. A key weakness in some states is in site discovery and assessment. Failure to do adequate

site discovery or to place sufficient emphasis on assessment may result in "surprise" funding needs that cannot be absorbed by the Fund.

Other important measures of Fund adequacy relate to the level of RP-funded cleanup that can be induced. Chapter Three identifies the factors that increase and decrease RP participation.

CHAPTER THREE
RESPONSIBLE PARTY PARTICIPATION

I. BACKGROUND

The Need for RP Participation

Participation by RPs is essential if a state cleanup program is to be effective. No state, not even New Jersey or New York where large sums of money are available for cleanups, has enough money available to pay for all the cleanups that will be needed. RP participation, either by conducting the response or paying for a Fund-financed response after the fact, is necessary to conserve or replenish a state's Fund for use on orphan sites and sites where RPs fail to do the work. Furthermore, cash flow and state staffing constraints mean that states cannot finance every site for which a response is needed at a particular time.

In addition to these financial imperatives, there are timing and policy reasons why states must be able to obtain RP participation. RPs may be able to clean up sites faster than a state because states typically must go through more cumbersome and time-consuming procedures to hire cleanup contractors than private parties. The actions taken by a state to obtain RP participation can also affect the future behavior of RPs. An RP may decide to settle at other sites based on what happened at an earlier site. This does not necessarily mean that the state must give the RP special benefits in early cases to encourage future settlements. The RP may be influenced to settle in the future if it sees that the process is fair and that it will not get a better deal from the state by "lying in the weeds" or otherwise seeking to avoid liability.

This influence can be extended to other RPs if the state takes similar actions, such as issuing cleanup orders or aggressively pursuing cost recovery, in several cases. Such actions are most likely to influence unrelated RPs if the state establishes a public perception of success in obtaining RP participation by publicizing its actions and the results. States and the federal government are also starting to see some deterrent effects from superfund liability in that RPs are actively improving their current waste practices to try to avoid potential cleanup liability in the future. Thus, enforcement efforts to obtain RP-lead cleanups can yield dividends beyond the cleanup in the specific case.

The need for RP participation is more critical at certain stages of the cleanup process than at others. RP participation may not be necessary for an emergency response. Many states have extensive experience in responding or overseeing RP responses to oil or hazardous substance spills. Whether RP participation at this stage is critical will depend on the state's ability to respond immediately. This, in turn, may depend on how much money the state has available and how quickly it is able to use that money.

Interim responses (e.g., removals), in contrast, may require substantial funds,[15] which could exhaust the funds available in many states. Eighteen states have less than 1 million dollars that may be used for superfund-type cleanups.[16] In these states significant RP participation may be needed at this early stage.

In addition, many states must obtain RP participation at the RI/FS stage if they are to be able to move a significant number of sites forward at the same time. Remedial investigations (RIs) can cost up to $750,000 or more,[17] which is relatively expensive considering that thirty-six states have Fund balances of less than $5 million.[18] Feasibility studies (FSs) are generally less expensive, but may still cost $250,000.[19] Absent RP participation, states with Fund balances of only a few million dollars would be able to act on few sites if the RI/FS costs approach these upper figures.

The need for RP participation is greatest at the RA stage because it is by far the most expensive stage of the cleanup process. Such costs can easily be 10-20 times higher than the investigation and design stages. Cost estimates for RAs on non-NPL sites are

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15. For example, Pennsylvania's statute defines interim responses to be any cleanup action requiring less than $2 million and 12 months to complete. See discussion of Pennsylvania statute in Part II infra.

16. "An Analysis of State Superfund Programs: 50-State Study," Table III-7, p. 66, Environmental Protection Agency (EPA/540/8-89/011) (1989)(hereinafter "50-State Study").

17. The Minnesota Pollution Control Agency (MPCA) estimates that RIs can cost anywhere from $50,000 to $750,000. See the discussion in Minnesota, V. Remediation Process, 4. Typical Site Timeline in Part II infra.

18. See 50-State Study supra, at 66.

19. The Minnesota PCA estimates that an FS will cost $25,000-$250,000. Id.

often in the $1-5 million range,[20] and yet only 13 states have Fund balances greater than $5 million.[21] Therefore, assuming the present level of state resources remains relatively constant, RP participation is critical if states are to actually clean up more than a handful of sites.

Benefits From RP Participation

It is widely assumed that projects performed by RPs cost less than equivalent projects paid for by government agencies. This is thought to be due to contracting procedures that must be followed by governments. The public benefits when costs attributable solely to such administrative matters are reduced since the same cleanups can be completed for less cost to society. Thus, to the extent that RP participation reduces purely administrative costs it benefits society generally. The public is concerned, however, that RPs may cut costs by performing cleanups that are potentially less protective of the environment. Therefore, cost savings must be monitored carefully to ensure that the quality of cleanups is not compromised.

RP participation may yield benefits that extend beyond the particular site, such as the development of new cleanup technologies. In contrast to most state agencies, RPs have the incentive and capability to develop innovative technologies.[22] Some RPs have demonstrated a particular interest in new technologies that may result in permanent remedies. These RPs are motivated to decrease total potential costs by eliminating the potential for future liability.

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20. Estimates for final cleanup action range from $1-$10 million in Minnesota to more than $50 million for one or more sites in Pennsylvania. See Part II infra, discussions of Site Remediation and Funding respectively.

21. 50-State Study, supra at 66.

22. In 1989 Minnesota PCA officials reported that some RPs in that state were developing innovative technologies but that the MPCA staff had little time, resources or incentive to pursue innovative cleanup technologies. MPCA has since devoted enhanced staff efforts to the use of such technologies.

Drawbacks to RP Participation

RP participation, particularly where the RP is performing the work, has potential disadvantages as well as advantages. The major concern to most government agencies is the degree to which they can trust the work done by the RPs. The level of concern ranges from questions about quality control to non-reporting or misrepresentation of data.

A significant reason that RPs want to do the work is that they can then control the costs. This may cause the government agency and the public to be concerned that protection of health and the environment will suffer for the sake of cost-control. This issue seems to be of greatest concern where RPs are performing the RI/FS since remedy selection, design and construction depend on the data and analysis done in the RI and FS. Thus, many staff within the states and EPA are wary of RI/FSs conducted by RPs.

RP Motivations

In order to be effective in obtaining RP participation in cleanups states must understand what RPs consider when deciding how to respond when they are involved at a site. Economic self-interest is obviously a major factor in their deliberations. Assuming that there is little doubt that a particular RP is liable,[23] that RP can be expected to act in the manner most likely to minimize its costs taking into account contingencies and the time value of money. Among the economic contingencies important to RPs are the timing of publicly funded action and cost recovery, the likelihood that penalties or punitive damages will be imposed, the ability of the government to prove its actions were not inconsistent with the NCP and the validity of the government's costs.

The widely held assumption among RPs is that response actions performed or paid for by a government agency will be more expensive than those performed by an RP. If an RP knows that the agency will be able to recover all of its costs from the RPs, including interest from the time the money is spent, then the RP will expect that it can reduce its ultimate cost by agreeing to perform the response action rather than letting the government do it at greater cost. Information is critical to RPs' abilities to evaluate these costs. If the

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23. Except where explicitly noted to the contrary, this chapter proceeds from the assumption that the state agency has sufficient solid evidence to make out a prima facie case of liability against at least one RP. Since this chapter focuses on obtaining RP funding or performance of response actions it also assumes that the RPs have at least some assets that can be applied to a cleanup.

RP has no information about the agency's ability to recover its costs, either because the agency has no track record or because the RP does not know how to find such information, or does not know how its costs for performing the work might compare with the agency's, then it will not be able to accurately assess its economic self-interest.

Another key factor in an RP's calculations is the extent of delay between the date the agency determines that RPs will not agree to perform the response action and the date the agency can hire a contractor to begin work. Since the agency is not spending money during this period it cannot charge interest and thus cannot offset the value to the RP of the use of its money during the delay. Therefore, the ability to quickly hire a contractor can have a major impact on the economic considerations motivating RPs to perform response actions. When there are significant delays before a state-funded response begins, the RPs' economic benefit comes at the expense of the public's interest in speedy cleanups.

II. COMMON EXPERIENCES AMONG THE STATES

Many of the states report similar results in obtaining RP participation. Large numbers of RPs are participating in virtually every state that has an active cleanup program. Although statistics are largely meaningless as measures of the effectiveness of enforcement programs,[24] RPs are typically taking the lead on more than half of the projects in active states.[25] RPs are also committing large sums of money to perform studies and

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24. See "Comparisons Among States" below for a discussion of some of the problems with statistics on RP participation.

25. Acknowledging the limitations of statistics, a few may give a sense of the scope of participation by RPs. New Jersey is currently conducting 85 Fund-lead projects while it has more than 500 in the RP cleanup category (this includes enforcement cases where the RPs have not agreed to do the work). In Minnesota 73 of the 104 sites where some response action has been taken are RP-leads. In Illinois RPs are conducting approximately 60% of the cleanups initiated to date. Texas has had a somewhat different experience in that of the first ten sites placed on its registry only three resulted in RP-lead response actions. The situation improved slightly for the next 17 sites added to the registry as RPs are taking action at 6 sites. Similar figures are not available for Oregon, Pennsylvania and North Carolina because their programs are quite new; however, North Carolina expects to rely heavily on RP cleanups. Colorado does not really have a comparable cleanup program so RP participation rates do not exist for that state. Finally, this study did not reveal similar data about the New Hampshire program.

cleanups--typically significantly more money in the aggregate than the state is spending.[26] This phenomenon appears to be unrelated to whether a state has an aggressive enforcement program, primarily uses incentives or is essentially passive.[27]

Many states are also seeing increasing numbers of voluntary cleanups performed by RPs outside of the "superfund" or enforcement context.[28] Part of the motivation for these cleanups may be to avoid the superfund process and cleanup standards.[29]

A number of states have reported that early in their programs RPs were willing to sign consent orders to fully remedy sites even before the RI/FS was completed.[30] This is

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Another study found that as of December 31, 1988, RPs had completely financed 60% of the cleanups of non-NPL sites and shared (through mixed funding with the state government) in financing another 3% while the states financed 24% of the site cleanups. "Hazardous Waste Sites: State Cleanup Status and Its Implications for Federal Policy," GAO RCED-89-164 at 29 (August 1989). In comparison, during the same period 47% of NPL site cleanups were financed by EPA while 24% were financed by RPs and 27% involved mixed funding. Id.

26. For example, in New Jersey RPs completed 135 privately-funded major remedial actions (defined to be those costing more than $100,000) between 7/86 and 12/88 at a cost to the RPs of $29.2 million and to the state of $550,000. See Part II, New Jersey IV. Funding, infra. During the life of Minnesota's program RPs have spent or committed more than $130 million on response actions while the state spent $12.4 million. See Part II, Minnesota I. Introduction, Statistics, infra. New Hampshire officials estimate that RPs have spent over $20 million on response actions during the 8 years of its program while the State has spent $5 million. See Part II, New Hampshire, I. Introduction, Sites, and Appendix 2, infra.

27. New Jersey, Minnesota and Illinois, for example, have aggressive enforcement programs and are achieving both high rates of RP participation and large sums of money committed by RPs. New Hampshire and Texas, however, are also experiencing significant RP participation with enforcement programs that are much more limited, whether due to resource or legal limitations. Although there are no statistics for the North Carolina program, virtually all of the response actions there are performed by RPs because the State has limited resources and believes it cannot afford to finance remedial action itself.

28. For further discussion of some methods that states are using to encourage "voluntary" cleanups see Chapter Four, infra.

29. Certainly other factors also motivate RPs to conduct such cleanups, including the ability to retain control of the cleanup, the public relations impacts of conducting a voluntary cleanup, and the effect on property values.

30. Minnesota officials were perhaps most cognizant of this phenomenon, but other states reporting similar experiences include Texas, Oregon, and North Carolina.

certainly a desirable outcome for states since they no longer need be concerned about discovering RPs, litigating against RPs, negotiating with RPs or performing the other tasks related to enforcement. More recently, RPs typically have resisted such comprehensive agreements because they do not know what the cost of the remedy will be until after the RI/FS is completed and the remedy selected.

Several factors may be motivating this behavior. State agency officials have described a "honeymoon period" at the beginning of new programs when each side is disposed to trust the other without much questioning of the potentially differing interests of each. Some state officials attribute this phenomenon to RPs being less sophisticated about the process when a program is new and thus more willing to accept the state's first demand for comprehensive action.[31] Another possible explanation is that in the early to middle 1980s the entire superfund process, at the federal and state levels, was new and all parties, RPs and government agencies, were unsure of how the process would work and what tactics would be best. If this hypothesis is valid, states that are currently developing programs could not expect a similar willingness by RPs to agree to perform remedial actions before the completion of the RI/FS.[32]

Another alternative explanation is that RPs that have not been involved in a superfund site cleanup before may not fully appreciate the potential costs of remedial actions. Similarly, if the agency first seeks an agreement to perform the entire response action, the first RP to receive such a demand cannot know whether the agency will stick to that position. The first few RPs may, therefore, agree to such terms. Once one or more RPs convince the agency to accept something less, however, that knowledge will be quickly disseminated within the RP community and all RPs will insist on the same treatment.

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31. Minnesota PCA officials articulated this theory based on their experience from the start of Minnesota's program in 1983 through 1989.

32. This explanation does not account for the experience in Oregon and North Carolina, which have recently had RPs consent to comprehensive response actions. Possibly those agreements were reached with smaller companies or RPs that were for some reason isolated from the national developments in the superfund process.

III. COMPARISONS AMONG STATES

Quantitative comparisons of RP participation rates in different states cannot be made with an acceptable level of confidence. There are simply too many variables that affect RP participation for statistical comparisons to be valid. Furthermore, states define their universes of cases against which an RP participation rate is calculated quite differently. For example, some do not list sites where RPs volunteer to do the work, while others may count sites where there is minimal state oversight of RP cleanups of their own property.[33] Some qualitative comparisons may, however, be possible.

Some of the variables that affect RP participation are beyond the state agency's ability to control. For instance, the types of sites vary dramatically among states. Some states have many industrial sites while others may have few such sites but many landfills that are releasing hazardous substances. These differences can affect or even determine the type of remedy chosen and the cost. Sites are also obviously quite different in their underlying soils, geology, and hydrology, all of which will affect the remedy and its cost. To further complicate matters, RPs vary from state to state as well as from site to site. In states where landfills are a significant problem many of the RPs may be municipalities. This presents special problems for states since municipalities are legislative creations of the state.

Some of the other variables that make it difficult to make valid statistical comparisons are within the state agency's control. These include the level of cleanup required, the types of remedies selected, the enforcement tools available for use and the ones used by the agency, the amount of money available for state cleanups, the ease with

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33. Most states calculate their RP participation rate using the total number of sites on which some cleanup activity is taking place as the denominator. Using the total number of sites known to have releases of hazardous substances as the denominator would give a different perspective on the scope of participation by RPs. In contrast, comparing RP participation only to the sites where some response action has occurred tends to make the ratio look high, since many states do not have the resources to take action unless RPs finance it.

North Carolina provides an example of the misleading nature of "RP participation rates." The state reports a high rate of participation, but only counts cases where there has been some action or negotiations. Since the state has funded only one state-lead removal and never issued a unilateral order the rate is close to 100% simply because the state excludes all cases of non-participation from its definition.

which state money can be used, and the types of actions for which state funds are used. For example, a state with no Fund or a Fund limited to emergency response will have 100% RP participation because there is no alternative. In contrast, a state focusing on orphan sites will have a relatively lower RP participation rate--not necessarily because its program is ineffective, but because it has elected to devote its resources to a different part of the problem.

Quantitative comparisons of RP participation would also be misleading because that is only one of several methods of obtaining cleanups through the "superfund" process. States can achieve site cleanups through state and federally funded actions as well as RP-funded ones. States must consider factors such as timing, availability of resources, future deterrent effects and control over the cleanup in deciding which source of funding to use. RP participation may be of varying importance depending on the stage of development of the program or the availability of state or federal money. In addition, there is a lag between the time enforcement actions are taken and when the effects are seen in increased RP participation due to deterrence. Therefore, states in the early stages of developing their programs will not have seen the deterrent effects of any enforcement actions.

Qualitative comparisons of states' experiences with RP participation are possible, though there are limitations. Such comparisons are useful primarily for evaluating the methods states use to obtain RP participation. The following analyzes the many techniques or tools that states use to obtain RP participation in cleanups. It focuses on the extent to which the technique or tool is effective in eliciting RP participation and the cost to the state or the public interest in achieving the goal of RP participation. Costs to the state include transaction costs as well as direct cleanup costs (such as are required for mixed funding agreements).[34] Costs to the public interest include lesser reductions in the risks from the sites--whether from lower levels of cleanup, cleanups that are not permanent, or cleanups that have have a higher degree of uncertainty.

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34. Other potential costs to the state include the time value of money if cost recovery does not include recovery of interest from the time the money is spent, personnel costs, and administrative costs.

IV. TECHNIQUES OR TOOLS THAT INCREASE RP PARTICIPATION WITH NO NET COSTS TO THE STATE OR PUBLIC INTEREST

TABLE 3-1
ENFORCEMENT TOOLS

State	Strict Liability	Joint & Several	Agency authorized to issue unilateral Orders	Punitive Damages	Civil Penalties
Colorado					
Illinois	X	X[1]		3X	$10,000/violation and $1000/day
Minnesota	X	X			$20,000/day
New Hampshire	X	X	X		
New Jersey	X	X		3X	Up to $50,000/day: $25,000/violation + $25,000/discharge
North Carolina		X	X		$10,000/day violation
Oregon	X	X[2]	X	3X	$10,000/day
Pennsylvania	X	X[3]	X	3X	$5000-25,000/day
Texas	X	X[4]	X	2X	$10,000/day
Other States	24	15	No data	17	38
TOTAL	31	23		22	45

1. Not in statute; state argues for strict, joint and several liability.
2. Common law rule applies that if harm is indivisible and not capable of apportionment, joint and several liability applies.
3. Legislative history indicates joint and several liability.
4. Liability is divisible where liable party establishes by a preponderance of evidence that it is liable for a portion.

Techniques That Have A Major Effect

Fund-Lead/Cost-Recovery

The primary method that has been effective in obtaining RP participation to date has been the ability to make a credible threat that if the RPs do not finance the response the agency can quickly use state funds to take action at a site and recover the costs from the RPs.[35] The availability of this Fund-lead/cost-recovery method can motivate both types of RP participation--payment of a state's entire costs of response after the fact and RP performance of the response as directed by the agency. To be effective in motivating RP participation this method requires that a state agency be able to use several enforcement tools in coordinated fashion:

Adequate funding. The first essential tool is a Fund of sufficient size to allow the state to fund several projects at one time while retaining the flexibility to add other fund-lead projects on relatively short notice. The balance necessary to meet these objectives will obviously vary depending on the number of sites a state has and the projected expense for the remedies. States can, however, make plans based on the experience of other states. Such experience indicates that RI/FS costs can easily top $500,000 and that a single RA will likely cost more than a million dollars. Thus, for virtually any program that has multiple sites a minimum of several million dollars would be needed to give the agency the ability to promptly fund several projects at the same time.

Cost recovery. The second tool that an agency must have if it is to make fund-lead/cost-recovery a credible threat is the ability to recover the state's costs from the RPs. Most state legislatures have authorized their state agencies to pursue cost recovery and, even if such authority is unclear or incomplete, the state may use section 107(a)(4)(A) of

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35. This does not necessarily mean the Fund-lead-cost-recovery technique is the most effective of the potential methods of obtaining RP participation. It is, however, the most effective of the techniques used to any significant degree by the states.

Illinois, Minnesota and New Jersey have each had cleanup programs for at least 6 years and all report that the ability to spend Fund money to remedy a site followed by cost recovery provides a major incentive to RPs to agree to do the work themselves.

CERCLA.[36] Simply having the authority to recover costs is, however, not sufficient to increase RP participation; increased RP participation comes only after a state demonstrates in at least one case that it will recovery all of its costs with little delay.

Cost recovery achieves RP participation by working on two levels; as the method of obtaining RP payment for the response action in the individual case, and as a deterrent to RPs in other cases who would otherwise seek to avoid their responsibillity. Each level depends on the state's ability to recover all of its costs. Failure to recover all costs has an obvious direct effect on the individual case--the state must bear the burden of the unrecovered costs. The effect of such failure on other cases is even more harmful. The deterrent effect of cost recovery is based on the RP's comparison of its projected costs if it performs the response with the projected costs if the government contracts for the work and recovers those costs. Knowledgable RPs investigate the government's record of recoveries to determine if it consistently recovers all of its costs. Every dollar of costs that the agency is unable to document and recover in a particular case reduces the difference between what the RP would be required to pay in the two situations and therefore reduces the incentive for RPs in other cases to agree to do the work.

A corollary to this principle is that RP participation by paying the state's costs after the fact is a loss to the state and the public interest to the extent that the agency cannot recover all of its costs, including interest.[37] Thus, implementation of the authority has been the key to whether cost recovery is effective--the threat alone is not sufficient.

Speed and flexibility of use of the Fund. Two factors that can greatly enhance the effectiveness of Fund-lead/cost-recovery as a method of prompting RP participation are the ability to use Fund money quickly and the flexibility to move funds from one project or activity to another depending on strategic considerations. The first requires that the

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36. CERCLA provides that owners and operators of facilities at which hazardous substances were disposed of, generators of hazardous substances, and transporters of hazardous substances, are liable for all costs of response incurred by a state not inconsistent with the national contingency plan (NCP). 42 U.S.C. 9607(a)(4)(A). This authority may be broader than a state's own cost recovery authority, but it also requires the state to ensure that its action is not inconsistent with the federal NCP.

37. This situation belongs in the category of factors that increase RP participation at the expense of negative impacts to the state or public interest as discussed below.

administrative process for approving a state-funded response be quick. The process used is less important than the ability to have a decision within weeks so that delay is minimized. The second enables a state to respond to positive or negative developments in negotiations with RPs at different sites. These administrative matters determine the speed with which an agency can implement a decision to take action at a particular site when RPs fail to respond as directed by the agency. States that have been able to respond quickly (i.e. within weeks) after identifying a site as needing a Fund-lead response have noted that RPs become more willing to agree to do the required work when they see that a contractor is about to be hired.[38]

Strict Liability

States that must meet a fault-based liability standard are severely hampered in their efforts to enforce cleanup requirements. When a state must prove that an RP was negligent or reckless (or other standard based on some level of fault) in contributing to the release of hazardous substances, it must use significantly greater resources in gathering evidence to prove the claim. In many instances such evidence no longer exists, and thus an RP that may have been at fault in contributing to the release may escape liability. Probably more commonly, the RP's actions may not meet the fault standard. Both situations reduce the pool of RPs available to fund the response, but the former may allow the most culpable RPs to avoid liability simply because of poor recordkeeping, memory loss, or loss of records over time. Where evidence of fault does exist, the agency will generally need to spend more personnel time and money obtaining that evidence than would be required to prove that the RP contributed to the release of hazardous substances. Thus, without strict liability RPs have little incentive to participate in a superfund cleanup until a judicial determination of fault is made or appears inevitable.

When liability is strict the agency's job is simplified; it need only establish that a release has occurred or is threatened and that the PRP contributed to that release. Evidence of the release is likely to be obtainable through public records, testing and other traditional methods of investigation that yield objective results. This contrasts with the type of investi-

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38. New Jersey, Minnesota and Illinois have reported that once RPs realize that the state agency is able to get contractors onto the site within a relatively short time, the RPs are much more likely to sign consent orders or otherwise agree to do the work.

gation that may be needed to prove fault since that evidence is often within the control of the PRP or is more subjective. Thus, strict liability allows a state to concentrate more of its resources on activities directly related to cleaning up the site, such as site assessment, RI/FS, and remedial design, rather than proving that the RPs' actions that contributed to the release of hazardous substances met some standard of fault.

Strict liability is an incentive to RPs to participate because it eliminates possibly the most subjective, or least predictable, methods of avoiding liability--arguments that the RP was not culpable. Its value to states, however, is less in the incentive it provides to RPs than in the fact that it allows the state to use its resources most effectively to obtain cleanups.

Joint and Several Liability

Joint and several liability for cleanups is another enforcement tool that states have found to be a significant factor in obtaining RP agreements to perform cleanups. The possibility that a single RP may be held liable for the entire cost of cleaning up a site where many other parties may also have contributed hazardous waste motivates RPs to seek out other RPs and to negotiate to share responsibility for the response specified by the government. Because each RP's effective liability is reduced by the participation of the others in the group, joint and several liability results in increased RP participation in multi-RP agreements. Thus, although there are various countervailing forces,[39] joint and several liability provides an incentive for the identified RP group to investigate the existence of other RPs and to obtain their participation in the response action. For these reasons joint and several liability is probably the most significant factor motivating multi-RP agreements with state agencies.

Joint and several liability allows the state agency to concentrate its enforcement time and resources on obtaining evidence of liability rather than also being required to establish the share of liability that is appropriate for each defendant. This can be a major advantage to the government. It is extremely difficult to determine precisely how much of each type of waste was placed at a site. In addition, allocations are usually based, at least roughly,

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39. These include very large RP groups, disparities in the volume or toxicity of materials contributed, and differing types of responsibility such as operators versus generators.

on the RPs' relative contributions to the cost of cleanup. The knowledge about synergistic and other effects of releases of multiple chemicals is, however, incomplete. Therefore, it is difficult to determine with any degree of assurance what costs can be attributed to particular contributors. These uncertainties can make liability allocations so complex that they could easily overwhelm a state's staff. Thus, joint and several liability allows the government to direct its resources at issues that relate directly to cleanups. In this context joint and several liability can be seen as a method of requiring that RPs, rather than the government, bear the transaction costs associated with distributing the burden of a shared liability.[40]

Order Authority

Another major enforcement tool that has a significant effect on RP participation is the authority to order RPs to take action. In its most effective form the state agency is authorized to issue administrative orders that it may enforce in court, but which the recipient has no right to challenge prior to such judicial review. In other words, if the recipient fails to comply with the order the agency has the option of enforcing the order, at which time the recipient would receive its due process right to a hearing, or taking action itself using Fund money. The latter option triggers the cost recovery provisions, and the combination of an outstanding order and state response costs raises the possibility of punitive damages if they are authorized.[41]

The key to making order authority an effective mechanism for obtaining RP participation is, like Fund-lead/cost-recovery, the ability to act quickly and to make RPs feel the effects of that action quickly. Thus, the strongest statutes authorize the state agency to issue orders administratively on the basis of the record before the agency; to issue orders

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40. There may, of course, be situations where even a state that has the benefit of joint and several liability will decide that it is worthwhile to perform an allocation. One such situation might be in a case where the RPs are unable to reach agreement among themselves on an allocation but will accept the agency as a neutral arbiter and will then reach agreement with the agency to perform the RA themselves. In such situations the state must evaluate the benefits it gains in terms of RP participation compared to the actual and opportiunity costs of performing the allocation. It should also be noted that there are professional neutrals that perform allocations as a consultative service to RPs, so states are not the only alternative for RPs that cannot reach agreement among themselves.

41. Punitive damages are discussed in more detail below.

regardless of whether other enforcement or funding options have formally been pursued; and to assess civil penalties or punitive damages for failure to comply with the order (subject to a limited good faith defense). Perhaps the most critical element of an effective administrative order statute is that it prohibit pre-enforcement review, either administratively or judicially, of the order.

The clearest example of such a system is §106(a) of CERCLA. Of the nine states studied for this Report, Texas, New Hampshire, North Carolina, Pennsylvania and Oregon have such authority. Of these, however, only Oregon is authorized to issue administrative orders closely following the federal model.[42] The others all have various restrictions or strictures not encountered in §106. The Oregon statute and program are, however, so recent that there is very little experience with its implementation. The experience of some of the states demonstrates that the absence of some of these provisions need not cripple a program, but that some such provisions may be essential.

The Illinois, Minnesota and New Jersey agencies in particular use creative ways to avoid problems caused by deficiencies in their statutory authority to issue administrative orders. For example, Illinois EPA (IEPA) lacks authority to issue administrative orders. Only the independent Pollution Control Board may issue an order, and it may do so only after a full adjudicatory hearing. IEPA has, however, created a substitute by issuing to RPs notices of liability that describe the action to be taken. These notices trigger treble damages if liable parties fail, without sufficient cause, to respond. IEPA has found that RPs often comply with these notices because if they do not the state is able to move quickly to start a Fund-lead action that would subject the RPs to cost recovery and treble damages.

On its face, Minnesota's statute is even more limited than the Illinois statute. The Minnesota Pollution Control Agency (MPCA) has no administrative order authority, must "request" RP participation before spending state funds and must receive authorization from an appointed Board before taking any significant action. The MPCA has turned the "request"[43] and Board approval process to its advantage by making it highly visible and

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42. Pennsylvania may apparently issue this type of order for an "interim response" action--that is, an action costing less than $2 million and lasting under 12 months, with no limitations. The limitations on state unilateral cleanup orders are discussed infra.

43. The MPCA has formalized these requests by issuing a Request For Response Action (RFRA) to each known RP.

public--thus putting pressure on RPs. As with IEPA, the MPCA is able to begin a Fund-lead action quickly, which increases the incentives for RPs to agree to do the work. In fact, according to MPCA officials, significant numbers of RPs comply with Requests for Response Action (RFRAs) even though they are not directly enforceable.

Similarly, New Jersey's Spill Compensation and Control Act authorizes the agency to issue directives but does not specify that those directives are enforceable. The New Jersey Department of Environmental Protection (DEP) issues directives in all cases because they are a prerequsite to punitive (treble) damage claims. The threat of a punitive damage claim, coupled with the state's ability to use its large Fund to finance state-lead actions, in many instances induces RPs to agree to do the work.

In all of these states the key to overcoming limitations in their authority to issue enforceable administrative orders has been the ability to issue a document naming the RPs followed by prompt initiation of a Fund-lead response and cost recovery. In Illinois and New Jersey the document is more coercive since it forms the basis of a claim for punitive damages.

Several of the states in the study group have provisions that create more significant difficulties in implementing their order authorities. The Texas statute allows RPs to obtain pre-enforcement review of an order by filing a petition in the Travis County (Austin) District Court. The order is stayed pending review and the court may also enjoin the Texas Water Commission (TWC) from taking a Fund-lead remedial action. This provision allows the RPs rather than the TWC to control the pace of the order process and allows RPs to slow down the remediation process itself. In practice this provision has reduced the utility of the unilateral order.[44]

Pennsylvania's statute is even more restrictive with respect to full remedial action orders. The Pennsylvania act protects RPs from a remedial action order until the DER has instituted enforcement action against the owner or operator under other applicable environmental laws and has been unable to obtain compliance. Predictably, the DER appears to be

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44. In 1987 the TWC issued orders to RPs at 7 sites; the RPs at 4 of the sites appealed the orders. One of the orders was ignored and the RPs at the other two sites negotiated agreed orders. See Part II, Texas, State Registry Sites, infra. 1989 amendments to the Texas statute have marginally improved the process, but RPs may still contest remedial action orders in court.

concentrating its superfund enforcement efforts on interim and emergency responses (including interim response orders) which do not require this exhaustion of other remedies.

Number of RPs

Another factor that has had a significant effect on the ability of states to convince RPs to sign consent agreements is the number of RPs involved at a site. States have generally found that it is easier to obtain consent agreements when there are relatively few RPs. Recognizing that states have no control over the number of parties that contributed wastes to a site, it is worth noting the impact of the size of the RP group because that may affect how a state approaches a particular site.

Several states and EPA Regional Offices have noted that negotiations are much easier to manage when the group is small. The Minnesota PCA noted particular success with groups of less than 5 RPs. Beyond the administrative aspects of negotiating with small groups, it appears that it is easier for RPs to reach agreement on their internal allocation of liability when there are relatively few of them. While the internal allocation of liability among the RPs is theoretically not a prerequisite to a consent agreement with the state, in reality RPs resist signing until they are sure what their share of the total liability will be.[45]

In order to take advantage of these dynamics, a state might choose to focus its efforts to obtain consent agreements on sites with few RPs. Alternatively, a state might, as the Minnesota PCA does, refuse to negotiate with large RP groups and insist that they form a small steering committee to negotiate the consent agreement with the state. The

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45. Conceivably, states that have joint and several liability could avoid all difficulties in obtaining multi-party agreements by taking advantage of the power of joint and several liability. Under this approach a state would select a single RP as an enforcement target and issue an order to it to perform the necessary response. Assuming that the state chooses an RP against which it has solid evidence and that the target RP is solvent, the state should reach the desired result--a judgment of liability for the remedy--without needing to pursue multiple parties. The prospect of being held solely liable for the entire remedial action will create a strong incentive for the target RP to seek out the other RPs and obtain third-party agreements or judgments that they are also liable, at least for contribution. In reality it is highly unlikely that any state would pursue such an enforcement strategy. In several studies of federal and state enforcement of superfund programs ELI is not aware of any instance where a government agency used this approach to a site.

latter tactic at least takes advantage of the administrative advantages of small groups of RPs where the other positive aspects are precluded.

Factors That Have Less Significant Effects On RP Participation

Punitive Damages

The ability to impose punitive damages on RPs that refuse, without sufficient cause, to respond as, and when, ordered (or requested in some states) has significant potential to motivate RPs to perform the desired work. Punitive damages are authorized for just this purpose--to punish RPs that shirk their clear duty and to deter others from attempting to avoid their legal duties where liability is clear. Thus, the damage amounts authorized are significantly higher than the original liability.[46]

Unfortunately it is difficult to determine the true effect that punitive damages have had on RP participation because they have been invoked only rarely. Of the states in the study group only Illinois has litigated any claims for punitive damages.[47] It is possible that states have not pursued punitive damages because the authority to impose them has had the desired deterrent effect and RPs are not unreasonably refusing to take action. While it is admittedly difficult to determine the number of cases for which punitive damages would be appropriate, most of the states in the study group reported some experience with

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46. Punitive damage amounts in state superfund statutes range from 1 1/2 to 3 times the state's costs and are generally authorized to be awarded in addition to the state's recovery of its costs. New Jersey is an exception since its statute apparently authorizes "treble" damages that include the state's costs. In reality this allows a recovery of costs plus a punitive award of double those costs.

47. Illinois has approximately six cases pending in which it has made claims for punitive damages. Some states in the study group were not authorized to seek punitive damages; these included Colorado, Minnesota, New Hampshire and North Carolina. States that authorize punitive damages include Illinois, New Jersey, Oregon, Pennsylvania, and Texas.

Although counting punitive damage cases was not a specific objective of the 50-State Study of State Superfund Programs, that study revealed no other cases where punitive damages had been litigated by a state. The federal government listed about ten cases as having active punitive damage claims in 1988, and EPA recently won its first punitive damage case. In United States v. Parsons, 30 ERC 1209 (N.D. Ga. 1989), the court granted the government's motion for summary judgment on claims for punitive damages against all but one of the defendants.

recalcitrant RPs where there was good evidence of liability, yet punitive damages were not imposed.[48]

Despite the dearth of data on actual effects of punitive damage awards, it is possible to analyze the expected effects. Punitive damages, particularly where they are double or treble the amount of the state's direct and indirect response costs, are potentially so high that RPs have significant motivation to avoid them. Even under the current situation, where punitive damages are largely only a theoretical possibility, states report that RPs tell them that punitive damages are one factor considered in deciding how to respond to a cleanup order. If a state wins a few punitive damage cases and thereby establishes a credible threat that they will be imposed, it can expect RPs to modify their conduct to avoid such potential liability.

It is difficult to selectively evaluate the effect of punitive damages because they are always used in concert with other enforcement tools. This is because they apply only if an order or request is issued, the named RPs fail to respond, the state performs the response action and the state sues for cost recovery and punitive damages. Thus, the effect of punitive damages may be hard to separate from the effects of the other tools.

Punitive damages are expected to have a significant effect because the state can impose a higher liability on recalcitrant RPs than is imposed on RPs that reach agreement with the state. Without punitive damages the best recovery a state could obtain would be its entire direct and indirect costs of response, including statutory pre-judgment interest. But simply recovering the state's costs may provide little disincentive to RPs who would delay paying for the cleanup until the state litigates the claim.[49] Since punitive damages

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48. Certainly factors other than simply the existence of clear evidence of liability should be considered in deciding whether a punitive damage claim is warranted. However, that is a primary factor and may be an indicator that there are valid punitive damage cases that are not being pursued.

49. If the state's costs are only fractionally higher than the RP's projected cost of response to an order, the economic benefit of delayed compliance may negate the higher cost of the state-funded response. Of course any costs that the state is unable to document, or which otherwise become unrecoverable, further reduce the RP's incentive to participate by performing the response.

have the potential to increase the RP's liability by significantly more than the cost of the response, they can be expected to discourage RPs from such delayed participation.[50]

Deadlines

Another potentially significant enforcement tool available to states is the setting of, and adherence to, strict deadlines for negotiations. States that have established a record of adherence to previously announced deadlines for negotiations report success in obtaining agreements with RPs within the established period. This occurs even when that time is as short as 3-4 months to negotiate an agreement for a remedial action.[51]

The state may have to demonstrate that it has the ability to, and will, move quickly to begin a Fund-lead response action if the deadline is not met before RPs will accept the announced deadline as a serious one. One state has noticed a pattern of RPs rushing to sign consent agreements when they discover that within weeks after the deadline the state is preparing to sign a work order authorizing a contractor to begin the response action.[52] Thus, the keys to the effectiveness of deadlines are adherence to them and the ability to impose on RPs who fail to consent by that deadline consequences they find undesirable, such as starting a Fund-lead response.

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50. Civil penalties are another mechanism for increasing the RP's liability when it fails to discharge its duties. Which mechanism will impose the higher potential liability will depend on the time and expense of the state's response action. For example, CERCLA and some state statutes authorize punitive damages equal to three times the government's response costs and civil penalties of up to $25,000/day if the RP fails without sufficient cause to comply with an order. If a state issues an order to an RP that does not have sufficient cause to refuse to comply and the state's response then takes one year the RP will be subject to civil penalties of $9.125 million. This could significantly exceed the liability for cost recovery plus treble damages (any response that cost less than $2,281,250 would result in a cost recovery/treble damage recovery less than the amount of civil penalties). Of course the state has the strongest position where it can claim that the RP is liable for full cost recovery, punitive damages, and civil penalties.

51. Many negotiators have noted that deadlines, even artificially imposed ones, create or enhance pressures within the negotiating groups to reach agreement rather than fail. A corollary principle is that negotiations will expand to fill the time allotted and thus can continue almost indefinitely if no deadlines are established. J. Miller & T. Colosi, Fundamentals of Negotiation: A Guide for Environmental Professionals 32 (1989).

52. Illinois officials reported that this has happened often enough to be almost expected.

Publicity

Publicity can be an effective auxiliary method of motivating RPs to participate. Most companies want to maintain good will with the public and will do what they can to avoid publicity that might affect that good will. Likewise, individuals want to avoid negative publicity. States can use that desire to their advantage by making it a practice to publicize events and decisions that reveal companies that fail to participate.

The first principle guiding states' use of publicity must be fairness. Among other things, the state's public statements should indicate the stage of the process, the state's position regarding the liability of the RP (including the legal status of the agency's position), the next steps in the process, and known information about the site.[53] The purposes of such publicity are twofold: 1) to provide the public with accurate information about the site and the responsible parties; and 2) to use public opinion and RPs' concerns about public opinion to motivate RPs to cooperate with the agency and participate in the response.

Publicity alone is unlikely to result in significant changes in RP behavior. It may, however, enhance the effectiveness of some of the tools discussed above if used in conjunction with them. Minnesota provides a good example of how publicity can be used to good effect when combined with a comprehensive enforcement program. In Minnesota all major actions must be approved by the Pollution Control Board acting in public session. Thus, there is automatic publicity of most events relating to RPs, including issuing RFRAs,[54] determining that RPs will not respond adequately, and authorizing the agency to sue RPs. Minnesota officials are convinced that this publicity, particularly of the decisions to name the RPs at a site (at the time the RFRA is issued) and to take enforcement action against RPs, contributes to the decisions by some RPs to participate rather than face enforcement action. This is exactly the type of behavior modification that a good enforcement program seeks to achieve.

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53. The Minnesota PCA and the Illinois EPA have both developed standard Fact Sheets explaining various aspects of the process and specific sites or chemical hazards. Both agencies report that the Fact Sheets appear to be successful in explaining the issues and process to the public. Samples of the Minnesota Fact Sheets are included as Appendix B to the Minnesota Report in Part II.

54. "Request For Response Action," required by statute to be issued to all known RPs before the State may take other action. See discussion of administrative orders above.

Some states have found that the publicity associated with listing a site as a potential hazard (on CERCLIS or an equivalent state list) or on the state's priority list can cause RPs to agree to perform a cleanup.[55] The desire of RPs to avoid being publicly identified in connection with hazardous waste sites even extends to sites that have not yet been determined to be hazards. Many RPs are thus quite willing to agree to perform a cleanup if it can be done without publicly identifying the site as a problem.

The Pennsylvania and Texas statutes explicitly provide that a site will not be listed on the cleanup priority list if RPs sign a consent agreement to clean up the site. This encourages RP participation; but at the price of public knowledge.[56] Even if the process of signing the consent agreement is public it may not receive the same degree of attention by the press or the public, at least partly because such stories are not as starkly simple as one listing a site as an abandoned hazardous waste site that may need to be cleaned. Public notice of the cleanup plan is, however, typically provided and that may be the most appropriate time for a state to heavily publicize the site.

Transaction Costs

Transaction costs obviously are a potentially important motivating factor for RPs. As a general matter RPs seek to minimize their transaction costs (although there may be a certain minimum threshold cost that must be exceeded before RPs consider such costs). If RPs perceive that transaction costs are significant they will attempt to avoid them by seeking early agreement with the agency.

Responsible public officials do not arbitrarily seek to increase transaction costs because these do not contribute directly to the desired product--a timely cleanup. It may be appropriate, however, to identify and account for the transaction costs so that all parties

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55. New Hampshire, North Carolina, Pennsylvania and Texas have have had, or expect, some RPs to agree to perform cleanups before listing in order to avoid or lessen the effect of being publicly identified with a hazardous waste site.

56. In Pennsylvania this is mitigated by requirements for public disclosure and review of consent agreements. This type of tool, which attempts to obtain RP participation by giving up some state or public interest, is discussed further under "Informal Deferral of Site Listing" below.

can see how much these often nonproductive costs contribute to the total cost of a cleanup. This may help to convince RPs to agree early in the process to perform a cleanup rather than incur the potentially high transaction costs of seeking to avoid liability.

Knowledgeable Representatives Of RPs

Several states have noticed that having a sophisticated group of environmental attorneys in the private bar who understand the state's cleanup law and process contributes to quicker settlements with the RPs. When the local environmental bar understands the state process the state loses less time in explaining to new RPs the basis of their liability or the many items which may not be negotiable. A knowledgeable bar can aid negotiations by explaining to its RP clients exactly what points are negotiable and the consequences of failing to reach a settlement. This can be particularly useful in states that have the capability to take quick action if negotiations fail. Attorneys that represent many RPs in different cases will know, and explain to their clients, that the consequence of not settling will be that the state funds the response and pursues cost recovery.[57] Thus, state efforts to educate the private bar may well yield dividends in smoother negotiations and quicker settlements with RPs.

V. FACTORS THAT INCREASE RP PARTICIPATION BUT HAVE POTENTIAL NEGATIVE IMPACTS ON THE PUBLIC OR THE STATE

States have used or considered a number of other techniques to encourage RPs to agree to perform or pay for cleanups. They have varying degrees of effectiveness in increasing RP participation, but also may involve some loss to or negative impact on the state's or the public's interest. These techniques will be discussed in the order of those most likely to increase RP participation while affecting the state or public interest the least.

57. This is certainly not the only possible state response, but it is the typical one.

Techniques That Have Varying Effects Depending On How They Are Implemented

Mandatory Requests For RP Action

Several state statutes require the state agency to attempt to obtain an RP-lead response before considering a Fund-lead response. These provisions are basically of two types. The first directs the agency to negotiate with the RPs to attempt to obtain a consent agreement for the RPs to perform the response.[58] The second requires the state to take enforcement action, such as issuing an order.[59] Both types of provisions may increase RP participation, though for diverging reasons. The usefulness of such broad statements of policy in modifying RP behavior largely depends on the rigor and consistency with which they are implemented.

Requirements that an agency request RP action or cooperation have had varying impacts depending on how the agency implemented them. Where the agency has made the request the cornerstone of an enforcement program that includes active RP searches, notification of all known RPs, public administrative determinations of liability, the ability to quickly begin a Fund-lead response if no RP will do so, careful cost accounting, and an active cost-recovery effort the results have been positive. These actions put the agency in the best bargaining position possible given the statute under which it must operate.

Using this type of approach, the Minnesota PCA has rarely been forced to use state funds for RAs where solvent RPs have been identified. In fact, the MPCA has had a

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58. Among the states in the study group Minnesota and North Carolina have this type of provision, although Minnesota's simply requires the agency to "request" that the RPs perform the response. The respective agencies administer them in significantly different ways, however. See the discussion of administrative order authority in "Order Authority" above.

Texas has a provision that requires the agency to contact all known RPs at the time it proposes to list a site. It must also allow the RPs the opportunity to conduct the RI/FS and provides RPs a total of 150 days to make a good-faith offer and negotiate with the agency to do the RI/FS.

59. Texas is the only state in the study group that has this type of provision, however, it was added in 1989 so there is little experience with its implementation. Moreover, the statute also allows RPs to obtain pre-enforcement review of RA orders. Since this essentially halts the cleanup process, the Texas provision is unlikely to have a significant effect on RP-lead remedial actions. Pennsylvania's statute contains a distinctly disadvantageous variation that requires the agency to exhaust its enforcement options under other statutes. See the discussion of administrative orders in "Order Authority" above.

number of RPs comply with its "Request For Response Action" without signing a consent order even though the "requests" are not directly enforceable in court. Although many factors obviously contribute, much of the credit for this successful record must go to the consistent implementation of the policy that responsible parties will pay for cleanups.

State agencies that do not create a good bargaining position for themselves have not, on the other hand, experienced the same success in obtaining RP participation. In North Carolina, where the agency is required to negotiate with RPs, the agency has insufficient funds to take action itself and has not established its authority to issue orders as a credible enforcement tool. As a result RPs negotiate with the state but sign consent agreements only when the terms are favorable to the RP. For example, in the two administrative orders on consent signed as of July 1989 the RPs, rather than the state, select the level of cleanup and the state acts in an advisory capacity. Furthermore, the agreements do not contain provisions for stipulated penalties if the RPs do not comply. Finally, if a dispute between the state and the RPs cannot be resolved, the agreement dissolves. In essence the RPs gain the imprimatur of state approval of a cleanup over which they have complete control and which they can abandon with no negative consequences.

Allocations of Liability

Some states are required to provide RPs with an allocation of liability based on specified criteria such as waste volume contributed, toxicity and type of contributor. The purpose of having the state allocate liability among multiple RPs is to encourage groups of RPs to agree to pay or perform the work. When a site has multiple RPs most states and RPs prefer to reach a single settlement with as many RPs as possible. This reduces transaction costs for both sides. Allocation is often the primary issue between the RPs. The theory is that an allocation by the state, a neutral party as far as the division of responsibility among the RPs is concerned, may be more readily accepted by the RPs than one performed by the group. It also may be impossible for the group to agree on the ground rules for an allocation, whereas the state can choose criteria and move on to implementing them. This may demonstrate that criteria some RPs may have thought were unfair result in an allocation that is acceptable.

When they work as intended, state-performed allocations may reduce the amount of time it takes to reach settlement with an RP group. They may also induce more RPs to

join the settlement than would have had the allocation been left to the RPs themselves. There is, however, little actual experience with them since they are a relatively new concept.[60]

The potential harm to the state's interest is that performing the allocation requires significant staff time and resources which may not be recouped in the settlement.[61] Even if the RPs agree to pay for the cost of performing the allocation the staff time may be a significant opportunity cost since that time cannot be used to develop other cases, manage cleanups or perform the many other duties for which state cleanup program personnel are responsible. Furthermore, the state may not have all of the information needed to allocate liability or have the appropriate expertise to do a credible allocation. This will either detract from the usefulness of the allocation or cause the staff to spend time developing the expertise or obtaining information, both of which the RPs are more likely to possess, at least collectively.

Pennsylvania DER must prepare a "nonbinding preliminary allocation of proportionate responsibility among all known responsible parties," and enter into a mandatory negotiation of the allocation. The statute also appears to require the DER to accept an RP's settlement offer if it agrees to pay its allocated share plus a premium of up to 50% of that share. The DER essentially is required to determine what an appropriate division of the potential liability will be and then the RPs have the option of paying this allocation (plus a premium) in exchange for a release from liability.[62] The practical effects of requiring the allocation and acceptance of a matching offer may be to set a maximum limit on each RP's liability to the state while allowing the RPs to argue for a different

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60. The U.S. EPA has been authorized to perform such allocations since SARA was passed in 1986 and had performed one as of March 1989. In that instance the agency reached settlement in a complicated multi-site case with hundreds of RPs for a remedial action estimated to cost in the range of $50 million. None of the states in the study group had completed a formal allocation as of June 1989.

61. The allocation done by EPA cost the agency $2 million and took at least a year to complete, including most of one attorney's time for that year.

62. The DER has taken the position that this buy-out provision applies only when there has been a comprehensive, agreed allocation. The issue has not yet been resolved.

(lower) share that could leave the state with unfunded liability after all the viable RPs have obtained releases. These provisions may vitiate the joint and several liability which the legislative history indicates was intended to apply.[63]

Techniques That Have Negative Effects

Concessions

Favorable terms in consent orders. A common method of encouraging RPs to agree to perform a response action is to offer more favorable terms in a consent order than would be contained in a unilateral order issued in an enforcement context. For the most part the success of this technique is directly related to how much the state is willing to give up in exchange for the consent.

The major issue for most RPs is their total liability. Thus, the items most likely to induce more RPs to settle are those that reduce or limit their potential liability. Absolute releases from liability (ie. no reopener clauses) may be the most desired, and therefore most effective, but also most costly, of such concessions. The greater the uncertainty about the possibility of future costs exceeding the current estimate the greater the likelihood that a release from liability will induce RPs to agree to pay for the cleanup. Of course granting a release in such a situation transfers the risk of those higher costs to the state/public. Thus, releases are a good example of how the effectiveness of the inducement is directly related to the potential harm to the state/public interest.

Caps on liability. An extreme example of a release from liability is to state ab initio that there will be a limit on the RP's total liability if it settles. North Carolina's statute contains such a provision limiting an RP's liability for the cost of a remedial action to $3 million if the RP volunteers. If the state is willing to limit an RP's liability to a specific amount, RP participation will be based on a simple comparison of the limit to the RP's estimate of the potential liability. Of course, if the limit is lower than the potential cost of the cleanup the state thereby accepts the risk that it will bear the additional cost of

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63. Some of the problems could be avoided if the DER is allowed to set limits on when RPs may accept the allocation and to reopen the allocation if new information is discovered. The state's interests would be best served if it could require further payment from an RP even after it paid its share (including premium) if new information showed that the allocation was unfair or that the state would be forced to assume a share.

cleanup without the possibility of reimbursement. This is a significant risk at sites where there are few RPs and becomes a certainty at single RP sites. If the state's Fund is small relative to the unfunded cost of these cleanups such a cap on liability may adversely affect the state's ability to achieve full cleanups. Thus, an absolute cap on liability has the potential for two significant adverse effects on the state: 1) the state may have to pay significant amounts of money for cleanups at sites with viable RPs whose liability has been artificially and arbitrarily limited to less than the full cost, and 2) full cleanup may not be possible if the state has insufficient funds to complete the cleanup.

Waiver of oversight costs. Another example of a concession commonly made by states is a limit on, or waiver of, the RP's obligation to pay the state's oversight costs. This is usually not a large amount--typically in the thousands, compared to response costs in the hundreds of thousands to millions, of dollars--so the negative impact on the state's interest is small; but so is the effectiveness as an inducement to RPs. In some cases the effectiveness of such a concession may be increased due to its symbolic value to the RP. This type of concession is usually made on an ad hoc basis. Texas, on the other hand, has made this concession a uniform policy by codifying it as part of the statute.

Ways to improve the gains from concessions or mitigate the negative effects. States may be able to increase the effectiveness of concessions in general by carefully managing how and when they are made. For example, concessions made at the start of negotiations usually have little effect in inducing a settlement, but a concession made in exchange for reaching agreement on significant issues may be very effective. This illustrates two points about negotiating for the government: 1) concessions should be made only when the government obtains something of value to it in return (usually agreement on issues) and 2) the exchange does not need to be equal; and, in general, should be heavily weighted in the government's favor.

Concessions typically have different values to the different parties and government negotiators should attempt to determine the value of a particular concession to the RP before making it. If the concession is one that the RPs have set as a goal it will grow in value the longer it is withheld. Thus, by careful management of relatively low-cost

concessions, such as limits on oversight costs or releases of liability with reopener clauses, the state may be able to obtain a final agreement or agreement on major issues.[64]

Proportional Liability

In a number of states the statute explicitly provides that liability is to be proportional rather than joint and several. The motivation behind such provisions usually is to be "fair"[65] to RPs rather than to attempt to increase the numbers of RPs that agree to pay for cleanups. Increased participation may, however, occur as a secondary effect of proportional liability systems.

On the other hand, proportional liability can also increase the state's costs in several ways. Proportional liability systems can operate in different ways. In some proportional liability systems the state must, in the event of a trial, prove, not only that each party is liable, but also the proper share of the total cost that is attributable to each liable party. This can greatly increase the state's litigation costs. It is also likely to reduce the strength of the state's bargaining position. In other states, such as Texas, the RPs must prove "divisibility" and then the court will apportion liability. This system places the burden on the RPs rather than the agency, but does not require the state to devote resources to defending a claim of divisibility--particularly where the resulting allocation may apportion liability to an insolvent RP. Proportional liability systems also force the state to assume the cleanup costs attributable to orphan shares, whereas under joint and several liability such costs may be spread among all the financially viable liable parties.

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64. A much more extensive discussion of negotiation techniques, including how they may be applied by government negotiators is contained in J. Miller & T. Colosi, Fundamentals of Negotiation: A Guide for Environmental Professionals (1989).

65. RPs, like defendants in multi-party tort suits, have argued that joint and several liability is unfair to them because a defendant that contributed only a de minimis amount of the hazardous substances found at a site can be held liable for the cost of the entire cleanup. Without further examination this would appear to be "unfair." But such an explanation ignores the fact that the party held liable has the right to bring the other RPs into the action, or sue them later, to recover an appropriate share. In this context joint and several liability can be seen more as a method of allocating those transaction costs associated with finding all the liable parties and proving the appropriate share of the total liability attributable to them. Joint and several liability places this cost on the party that created the hazardous condition, whereas proportional liability places this burden on the government.

Less Expensive Cleanups

Another method of inducing RPs to pay for or perform cleanups is for the state to allow RPs to perform less expensive cleanups than would be done if the state paid for the work. It is not clear that more expensive remedies are always more environmentally protective. Some of the permanent treatment and destruction remedies are, however, significantly more expensive than containment or land disposal remedies that carry the risk of failure which could cause further harm in the future. A policy of negotiating less expensive remedies could, therefore, increase the risk of future environmental harm. This has been a major concern of community and environmental groups.

In some states if an RP 'volunteers' it will be allowed to perform a less expensive cleanup than would be required if the cleanup were done under the federal Superfund program and EPA oversight. Such treatment may be limited to sites that were not already in the state or federal system, i.e. CERCLIS or the state equivalent, or may extend to any site where an RP volunteers to perform a cleanup. Although there is no reason to assume that the federal remedy selection system is inherently more protective of the public interest than any state's system, the public tends to judge all cleanups by comparison to what would happen under the federal system. Furthermore, there is significant concern that the government should not vary the level of cleanup or protection of the public health and the environment based on whether the RP is cooperative or not. Thus, there is significant potential for harm to the public interest inherent in either method of negotiating remedies.

Policy of Not Using Fund

A number of states have a policy or statutory requirement of not using their Fund unless options for obtaining RP financing have been exhausted. While a general policy of first pursuing RPs to perform the response is appropriate and sends a message to RPs, requiring the agency to do so in all cases is demonstrably counterproductive. Mandating particular actions, whether by statute or policy, reduces the enforcement options open to the agency which weakens its ability to reach the goal of cleanups financed by RPs. In particular, removing or delaying the threat of use of Fund money removes or delays the single factor that is often the most significant economic threat to RPs. RPs then know that a certain amount of time will elapse before any economic consequences attach, thus

eliminating any economic incentive for them to act until the end of that time.[66] At the least this impairs the state's negotiating position and reduces its enforcement leverage.

If part of an active enforcement effort, these policies may not have such negative effects. For example, if the state actively searches for RPs, and is successful in discovering previously unknown RPs, then RPs that might otherwise have passively waited for the state to take action may be convinced that to do so is futile. Such success is attributable to the enforcement efforts, however, rather than the policy of only using the Fund as a last resort.[67]

Settlement First Policy

A state may also reduce its enforcement leverage when it has a stated policy in favor of negotiated settlements rather than enforcement. In extreme cases[68] such settlement first policies violate a fundamental principle of negotiating--they reveal that the agency has no option for obtaining its ultimate goal (cleanup) other than a negotiated agreement. When it is clear to RPs that the state is not prepared to take enforcement action, or that it will go to great lengths to avoid doing so, the RPs know they have little to lose if they take extreme positions in negotiations. They know that the government can only achieve its goal by making concessions and will use that knowledge to gain the ones they want most.

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66. Pennsylvania provides an example of this type of policy against Fund use. The statute requires the state to negotiate with RPs for specified periods of time before listing a site, regardless of whether such negotiations show any promise of success. Any delay in the time when an RP must pay for a cleanup is valuable to RPs since they retain the use of their money that much longer. This requirement gives RPs the benefit of such a delay without exacting anything of value to the state or the cleanup program in return. (This situation is mitigated to some extent by another provision that allows the state to spend $2 million without first negotiating with RPs.) Texas and other states also have required negotiating periods.

67. Minnesota is an example of such a system. See discussion of Minnesota's program in Part II infra.

68. North Carolina may be an example of the extreme situation since its statute requires the agency to solicit cooperation from RPs before it may use enforcement tools and the agency believes its Fund is to small to afford Fund-lead remedial actions. Thus, RPs know that the agency will not impose any sanctions on them if they fail to reach a negotiated agreement.

This does not mean that states should not favor negotiated agreements over litigation or Fund-lead cleanups, or even that such a policy should not be made public. In fact, settlements are generally preferable to enforcement action because they usually achieve the goal of cleanup in less time and at less cost to the state than would enforcement. The key is that RPs must know that the state has options other than the negotiations for obtaining cleanup. Then the agency can bargain from a position of strength enabling it to extract concessions from the RPs rather than being forced to make all of them itself. Thus, public policies that eliminate or delay an agency's enforcement options in favor of negotiations with RPs harm the state's interest by removing the state's most significant bargaining chip--the threat of enforcement if a settlement is not reached.

Informal deferral of site listing. Some states encourage RPs to agree to perform cleanups by informing the RPs that the state will not submit the site for listing on the federal CERCLIS or NPL if the RP will clean up the site. Several states report that this type of informal deferral of listing a site has been effective in convincing RPs to clean up sites.[69] Many RPs perceive this to be a benefit because they believe the federal process will be more expensive than cooperating with the state.[70] RPs may also prefer to keep a site totally within a state's process because they may believe they would have greater influence on the pace, oversight and level of cleanup than if the federal government were involved. Moreover, RPs may believe their negotiating position is better with state

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69. Among the states in the study group New Hampshire reported that RPs are willing to agree to clean up sites if by doing so they can avoid having the site listed on CERCLIS, while the Minnesota PCA stated that it had obtained RP cleanups in the past by informally deferring NPL listing. Minnesota officials report that this technique has become less viable recently because EPA has not placed on the NPL any of the sites the state has submitted in the past couple of years. Therefore, RPs no longer believe the state has a benefit to offer in exchange for the cleanup since the site will not be listed in any event.

70. Several factors may influence this perception that the federal process will be more expensive. RPs may believe that the remedies chosen under the federal Superfund system will be more expensive than those chosen under a purely state system. They may also believe that transaction costs will be higher using the federal process. They may also believe that indirect costs may be higher under the federal system, particularly if the state's process is not as public as the federal process. All of these are widely held, if not documentable, perceptions of the federal Superfund process. Finally, NPL listing typically causes an immediate decrease in property values, which may be of particular concern to owner/operator RPs.

officials who may be sensitive to suggestions that the cost of cleanup might drive the business out of the state. Obviously this technique is highly dependent on the perceptions of RPs and thus its effectiveness would vary with each RP.

More importantly, such informal deferral has important negative implications for the public interest. CERCLIS was intended to be an objective inventory of sites that may contain hazardous substances. The integrity and usefulness of the inventory is destroyed if sites are artificially kept off the list. By keeping sites off CERCLIS a state deprives its citizens and the rest of the country of the opportunity to learn the full scope of the problem of contaminated sites and of the knowledge of the progress in decontaminating those sites. In this respect CERCLIS is significantly different from the NPL because inclusion on CERCLIS does not necessarily mean that a cleanup will be performed under the federal Superfund program. Thus the consequences to RPs from CERCLIS listing are much less significant than those arising from NPL listing.

Informal deferral of NPL listing in exchange for RP agreement to perform a cleanup may be even more detrimental to the public interest. First, some critics claim that states often choose less permanent or less environmentally protective remedies than would be chosen under the federal Superfund program.[71] The permanency of remedies is a serious national concern since repetitive cleanups of the same sites are an obvious waste of money and may cause prolonged harm to the public health and the environment. Second, informal deferral from NPL listing may be contrary to the public interest if the state's decision process is less open to public review and comment. Thus, there are significant potential drawbacks to an informal deferral policy.

A state could, however, implement a deferral policy that would produce greater public benefits than the federal system. Such would be the case if, for example, the state cleanup standards were equivalent to or higher than EPA's, cleanups were completed in less time, and the public was more directly involved in the cleanup decisionmaking process.

No conclusions can be drawn about the actual effect of existing deferral policies on the public interest for several reasons. This study has not attempted to collect information

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71. See e.g. Coming Clean: Superfund Problems Can Be Solved ..., Office of Technology Assessment (1989). Comparison to the federal Superfund program is fair because the presumption is that the site was eligible for a Superfund remedy since the state is deferring NPL listing.

on the degree of environmental protectiveness or permanence of remedies chosen by the states. Furthermore, no attempt has been made to compare such remedies to those chosen by EPA at Superfund sites. Indeed, it may be that no valid comparison between remedies at Superfund and non-Superfund sites can be made due to inherent differences in the sites, contamination, relevant public policies and applicable laws. Nor does this study attempt to compare the states' procedures for public review and comment to the federal Superfund procedures.[72]

VI. FACTORS THAT DECREASE OR DELAY RP PARTICIPATION WITHOUT COMPENSATING BENEFITS TO THE STATE OR THE PUBLIC INTEREST

Preenforcement Review

Some state statutes allow an RP to appeal a unilateral order to either an administrative body or a court as soon as the order is issued. When, as is typically the case, a right of immediate appeal is coupled with provisions staying the effective date of the order pending the outcome of the appeal, the state agency's ability to clean up the site is substantially impaired. When RPs are allowed to obtain preenforcement review they have no incentive to take action or even to negotiate with the state since they can avoid all response costs simply by appealing the order and litigating all issues. So long as the costs of litigation are less than the projected costs of the response action it will be in the RPs' economic self-interest to pursue their appeal rights through the entire judicial system. Such litigation is likely to take years even in the most expeditious court systems. Such delays obviously are detrimental to the state and public interest in cleaning up the particular site, but appeals also consume scarce agency resources, including staff time, that might otherwise be used on state-funded cleanups of other sites. In addition to the loss of staff time available for other cleanups, the costs of litigating the case could be substantial and deplete the funds available for fund-lead projects. This is particularly likely if the agency

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72. To attempt to do so would inevitably raise the difficulty of comparing formal federal procedures, relying for the most part on written comments, to less formal procedures, typical of states, involving personal contact between government staff and citizens. The first can be standardized and monitored for consistency over many sites while the second has the potential for significant impact but is much more difficult to monitor or implement consistently.

must allocate cost shares among the RPs. Finally, assuming the agency was permitted to clean up the target site using its own funds,[73] the staff familiar with the site would have less time to devote to the cleanup due to the need to prepare the case for litigation.

Preenforcement review of cleanup orders has the potential to bring a state's entire cleanup program to a complete halt. At a minimum, granting preenforcement review rights to RPs prevents the agency from controlling when a site is cleaned up. Timing then depends on the vagaries of the courts rather than considerations of public health and safety and protection of the environment. Even where the agency is permitted to take fund-lead action during the litigation, resources will be diverted from that action to satisfy the demands of court-imposed deadlines. Moreover, in states that must issue orders before taking fund-lead action, preenforcement review forces the agency to litigate all of its fund-lead cases thus limiting the number of fund-lead actions that can be taken at one time.

In states such as Texas and Illinois where preenforcement review is allowed the agencies have found that the only way to make progress in actual cleanups is to avoid the situations that give rise to the right of review. In Illinois that means avoiding requesting formal administrative orders, which must be issued by the independent Pollution Control Board after a full hearing. Instead the agency issues notices of liability that subject the RP to cost recovery and punitive damages if it does not agree to take the appropriate response action. These notices are effective enforcement tools because the IEPA has the ability to quickly begin fund-lead response actions. The Illinois EPA also has the option of requesting that the Attorney General sue the RPs for performance of the response action.[74] These options allow the IEPA to retain the elements of control necessary for an agency to "enforce" its determinations of the proper course of action and to negotiate from a position of strength.

The Texas Water Commission has not found a similar method of avoiding preenforcement review and the attendant stay while retaining the ability to enforce its

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73. Some states are prohibited from using fund monies if viable RPs exist.

74. Although this would also involve the delays inherent to litigation, it is the government's choice and the government can select the most appropriate cases for such action. This element of choice also means the government need not litigate all cases at one time.

decisions.[75] The TWC can start a fund-lead RA, but the contracting process for RAs on state Registry sites has been subject to significant delays. The TWC thus has little option but to negotiate with the RPs to obtain their agreement to perform the cleanup. But this places the TWC in a weak negotiating position since the RPs know that it will have difficulty obtaining a prompt cleanup except by agreeing with the RPs. Thus, in Texas pre-enforcement review has vitiated the TWC's ability to enforce its decisions on cleanups.[76]

Limitations On Enforcement Discretion

States' abilities to enforce their cleanup decisions can also be undermined by statutory provisions limiting what types of enforcement actions can be taken or when the agency may act. Selective enforcement is a key element of an effective government enforcement program since no agency can discover and take action against all violations. Thus, to be effective an agency must be able to chose from the many potential enforcement targets those cases that are the most serious, will have the largest deterrent effect, can be completed in the shortest amount of time or meet other similar government goals. Another essential aspect of selective enforcement is the ability to chose which enforcement tools or methods to use in a particular case based on the government's judgment of what will be most effective under the circumstances. In general, any statutory provision that limits the government's discretion to use otherwise applicable enforcement

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75. The Texas Chapter of Part II contains a detailed discussion of the preenforcement review provisions, how they have worked in practice, and their implications for the State and RPs. As of 1989 preenforcement review applies, however, only to RA orders. Amendments to the statute eliminated preenforcement review of RI/FS orders; if RPs do not agree to do the RI/FS, the State does it.

76. Chapter 11 of Pennsylvania's Hazardous Sites Cleanup Act (HSCA) also allows RPs to appeal orders to an administrative body. Unlike Illinois RPs, however, Pennsylvania RPs must comply with these orders during the pendency of their administrative appeal, unless they can obtain a stay. The RP bears the burden of proving it is entitled to a stay and must meet standards similar to those required for a preliminary injunction, including that the state and public will not be injured if the stay is granted. Thus the right of appeal does not necessarily delay cleanup as it does in Illinois and Texas. Furthermore, the Pennsylvania DER has other enforcement options, including completely separate order authority under Chapter 5 of the HSCA, for which there is no right to preenforcement review.

authorities or methods impairs the government's ability to attain the goals of the statute that established the enforcement authority.

Some state cleanup statutes require the state agency to issue orders (or the equivalent first step of enforcement) to all known RPs.[77] This also restricts an agency's discretion and limits its ability to enforce selectively. Requiring an agency to take enforcement action against all of the possible defendants means the agency cannot focus its enforcement efforts on the parties against whom it has the best case, who are responsible for the greatest share of contamination or who are solvent. This eliminates the first aspect of selective enforcement--choosing the most appropriate enforcement target.

The negative effects of mandatory enforcement provisions may be mitigated in some states. In states where liability is not joint and several the agency would likely take action against all RPs in any event in order to obtain the highest possible percentage of RP financing of the action. Even in states that have the benefit of joint and several liability, where selective enforcement against "deep pocket" RPs against whom the agency has good evidence of liability might simplify the agency's task, the burden of proceeding against all RPs may not be too significant. First, the agency can alleviate the burden by issuing orders (or notices) to all RPs but requiring them to form a committee to negotiate with the agency.[78] Second, in a cleanup case all the defendants are associated with a particular site and much of the enforcement effort will be applicable to all the RPs. This contrasts with the typical regulatory enforcement situation where each defendant represents a completely different case with different facts. Finally, the general practice of most agencies has been to take action, at least initially, against all RPs. Thus, agencies may be able to minimize the limitation on their discretion imposed by provisions requiring them to act against all RPs.

Statutes requiring an agency to exhaust certain remedies before taking enforcement action[79] are a more significant limitation because they vitiate the state's ability to select the

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77. Of the study states, Texas, Pennsylvania, and Minnesota have such provisions.

78. Minnesota has a clear policy of proceeding in this manner and most agencies use this technique to some degree.

79. This includes spending Fund monies since that can constitute enforcement if it is followed by cost recovery.

enforcement tool most suited to the particular facts and parties. Section 1301 of Pennsylvania's HSCA is an example of such a provision. As noted above, it requires the state to show it has instituted action against an owner/operator without success through the use of all other applicable environmental statutes before proceeding against other RPs. This constrains the DER's ability to choose the enforcement option most appropriate to each case, except where there is no viable owner/operator.

VII. CONCLUSION

Many tools and methods are available that can be useful to states in obtaining RP participation in cleanups of hazardous waste sites. Some are action-forcing and some are inducements. Both types can be effective in convincing RPs to perform or finance the necessary response action. This study has not identified any single tool or mechanism that is absolutely essential to obtaining RP participation, however, the ability to use several tools and the flexibility to choose the most appropriate tool for a particular situation are attributes common to most effective programs. The ability to quickly apply the chosen tool to a particular situation also significantly enhances the effectiveness of that tool.

Although action-forcing tools and positive inducements both result in RP participation, successful states use the mandatory tools as the primary options and tend to use inducements more sparingly. Mandatory tools, such as orders or fund-lead remedial actions followed by cost recovery and punitive damages, have the advantage of forcing RPs to bear the costs of cleanup without requiring the state to make concessions that might not be in the public interest. The problem with inducements is that they typically involve the state making a concession that often affects the public interest. In addition, once the state has made a concession in one case RPs in other cases demand that they be treated in the same manner. Thus the tendency is for each concession to become expected as standard for every settlement regardless of the circumstances that originally led the agency to make it.

CHAPTER FOUR

INCENTIVES FOR VOLUNTARY RESPONSIBLE PARTY PARTICIPATION IN THE REMEDIATION PROCESS

Voluntary participation in the remediation process by responsible parties is critical to the success of a state's hazardous waste cleanup program, particularly given the funding limitations present in many states. Active voluntary RP participation allows the assessment and cleanup of contaminated sites with comparatively little expenditure of a state's scarce time and resources. Moreover, cleanup often can be performed sooner and more expeditiously when conducted by the RP who usually does not have to follow time-consuming state contracting procedures.

By the time a state has studied the site and given it a high priority ranking for remediation, the likelihood of an enforcement action to compel performance and recover costs increases. Thus, an RP has an incentive to clean up voluntarily in order to avoid state or federal enforcement and the high costs associated with such action. Many of the economic incentives discussed in this chapter, however, encourage the early voluntary involvement of RPs in the evaluation and cleanup of sites that have not yet been identified by the state or that have been given a low priority for study. These sites may be a low priority because there is no known release into the environment or no current risk due to the remoteness of the site or type of contaminant. In many cases the evaluation and cleanup of these sites may not be accomplished or might be delayed significantly if addressed by the state or federal government. Such delays might allow a low-risk site to develop into a significant hazard.

Unlike enforcement actions, for which direct results can be calculated, it is difficult to quantify the value of the incentives discussed in this chapter. Most state officials believe, however, that there are distinct advantages to instituting mechanisms that encourage voluntary RP participation in the evaluation and cleanup of hazardous waste sites. These advantages, however, may be tempered by potential problems that can arise with voluntary RP participation. Without proper oversight, an RP-lead site evaluation can bias the results and distort the extent of the risk or need for cleanup. Another major concern with voluntary RP cleanups is that the remedy selected will be protective of health and the environment. Both of these concerns may be addressed through proper state oversight of the voluntary action.

Sites that involve a number of RPs also present potential difficulties for successful voluntary actions. Under the volunteer approach, obtaining agreements among the RPs with respect to cleanup standards, the choice of remedy, and proportionate shares may create delays and lengthy litigation. At such sites, state enforcement action may be necessary to force RPs to work together. The impacts on RP participation of a state's enforcement capabilities and of statutory provisions encouraging settlement are examined in Chapter III.

The types of incentives for RP participation discussed in this chapter are more subtle. They are motivating factors that are an indirect result of the state superfund program, that derive from the non-enforcement aspects of the program, or that come from outside of the program altogether. Generally, these incentives are based on an RP's determination that it is economically advantageous to speed up the evaluation and remediation process rather than to wait for the state to take action. The incentives discussed below include those that are coercive as well as those that merely encourage, facilitate and foster RP participation.

The "RP participation" discussed in this chapter includes all actions taken by an RP, ranging from an environmental audit and preliminary assessment of property for identifying actual or potential contamination to implementation of site cleanup.

I. INCENTIVES RELATED TO PROPERTY TRANSFER

The most opportune time for a state to encourage RP participation is prior to the transfer of the contaminated site. At this time, the buyer, seller, and the lending establishment all have a stake in effectuating the sale and are willing to expend resources for its quick resolution. We discuss below various methods states have employed to use this economic incentive to foster the evaluation and cleanup of hazardous waste sites. Some of the options that states have employed include mandating disclosure to the buyer of hazardous substance disposal, requiring an environmental audit prior to sale, or requiring actual cleanup before the transfer may occur. All of these options help to shift the job of identifying and cleaning up hazardous waste sites from the state to private parties.

State Approval Of Property Transfers

Several states have enacted laws placing certain requirements on the transfer of property to encourage the remediation of hazardous waste sites. One of the most stringent of these is New Jersey's Environmental Cleanup Responsibility Act ("ECRA"), N.J.S.A. 13:1K-6 et seq. Before transferring or ceasing operations at an industrial establishment involving hazardous substances, ECRA requires that the owner or operator obtain either 1) New Jersey Department of Environmental Protection ("NJDEP") approval of a "negative declaration" that the site is not contaminated; 2) approval of a cleanup plan; or 3) a consent order allowing the transfer to proceed as long as either party provides financial assurance for cleanup. If the transferor fails to comply with ECRA, either the transferee or NJDEP may void the sale, and the transferor may be liable for damages and civil penalties. The possibility that a sale may be voided and collateral may be lost has spurred bankers and mortgage lenders in New Jersey into becoming very meticulous with their clients regarding ECRA compliance, rendering them de facto ECRA enforcers. Consequently, NJDEP receives approximately 5-6,000 requests per year for a determination as to whether ECRA applies to a particular transaction. Although about 80% of these transactions are not covered by ECRA, approximately 1,200 properties per year become ECRA cases and should eventually be cleaned up by the seller or buyer.

Obviously, ECRA has a tremendous impact on the number of cleanups in New Jersey that are being initiated by private parties. The statute, however, has provoked significant criticism from the business and financial communities. Because of the broad coverage of ECRA, the number of submittals that must be reviewed has created delays in approving negative declarations and cleanup plans and has resulted in some economic loss due to the postponement of the property transfer. Moreover, the sites addressed by ECRA are not selected on the basis of health or environmental priorities, but merely on the fact that a "triggering event" has occurred. Obviously, ECRA is not a complete substitute for a systematic assessment and prioritization of sites needing immediate cleanup. To address the problem of delay, New Jersey now allows transactions to go forward without approval, but only upon the execution of an administrative consent order under which substantial financial assurances must be posted.

The business community also objects to the "draconian" aspect of ECRA that imposes upon the present owner the cost of cleanup even though the contamination may

have been caused by prior owners. Some critics contend that businesses may be forced to maintain a "skeleton" staff at a site rather than actually closing operations to avoid the application of ECRA.

New Jersey officials dispute the "anti-industry" label given to its ECRA statute and maintain that property declared "clean" under ECRA is greatly desired. Moreover, requiring cleanup under ECRA may eliminate incipient hazardous waste problems at a lower net cost to the landowner than if the site were addressed at a future date. Of more practical concern to a state considering enacting an ECRA-type statute may be the fact that its broad application requires substantial staff involvement and resources. The New Jersey ECRA program was initially funded from the state Spill Compensation Fund; however, it is now supported entirely by the regulated community through fees for processing ECRA documents.

Other states have recognized the benefits of "ECRA-type" requirements and have enacted laws that are similar in concept but not as broad in application. A recently enacted statute in Connecticut requires either 1) that the owner of any industrial establishment involving hazardous waste submit a "negative declaration" to the state within 15 days after the transaction, or 2) prior to the transfer, the transferee or any other party shall certify that he shall mitigate any hazardous waste threat that might be present. C.S.G.A. 22a-1349 et seq. Although the transferee may obtain damages for failure to comply with the statute, neither the transferee nor the state may void the sale. The Connecticut statute avoids the delay problems associated with the New Jersey law by allowing the transfer to take place prior to a review of the negative declaration. Should the negative declaration prove to be defective, however, cleanup is not guaranteed, and the state's sole enforcement tool is the imposition of civil penalties for violating the statute, not voidance of the contract.

Iowa also requires agency approval of any transfer or change in use of any site listed on the state registry of confirmed disposal sites. Missouri requires the director's written approval before a person can substantially change the manner in which a site on its registry is used; only department notification is required after a sale. The use of this approval authority over listed sites as an incentive for RP cleanup is diminished in these states, however, because the site owner is given a right to contest the listing, thereby making the listing process lengthy and time-consuming. Moreover, limiting the application

of a property transfer law to listed sites not only reduces the number of properties under the law's jurisdiction, but also places the burden of site investigation on the state rather than the parties seeking a transfer or change in use.

It is clear that a requirement that the state declare a site "clean" before it can be transferred is a most effective incentive for the cleanup of sites by private parties. While a broad property transfer statute reaches many sites, its administration and funding requirements may prove difficult to fulfill. For those states lacking the resources to initiate a comprehensive ECRA-type program, state approval for the clean transfer or use of only those sites listed on the state registry or list might be a suitable and more manageable alternative. Such a statute would only be useful, however, if the listing process were easy and quick, and if the range of sites requiring transfer approval included those suspected of contamination.

Disclosure Requirements

While not as burdensome as requiring state approval of a property transfer, requirements that either the state or the property owner disclose the fact of contamination certainly help identify hazardous waste sites and may also foster private party cleanups. Some state laws require disclosure to the parties at the time of transfer, others require that disclosure documents be recorded on the deed, and a few require both.

The Illinois Responsible Property Transfer Act of 1988 requires that the owner of certain properties (those subject to the federal Emergency Response and Community Right-to-Know statute or that contain an underground storage tank) provide a detailed environmental disclosure document to the buyer and lender. These documents must also be filed with the Illinois Environmental Protection Agency and with the recorder's office for the county in which the property is located. If the required disclosure is not made or if the document indicates previously unknown environmental defects, any party may void the sale.

The Minnesota statute requires that owners who know or should know that their land is contaminated record an affidavit with the county recorder of deeds prior to sale. Although there are penalty provisions, failure to record the affidavit does not prevent the transfer. This disclosure statute relies on the good faith of the owner to record the affidavit, and the state has no right of approval over the filed document. In North Carolina, Missouri and Iowa, state officials prepare deed recordation documents for sites listed on the

state list or registry. While these deed recordations absorb the time and resources of the state agency, the state at least has greater control over their accuracy based on the information it has obtained prior to listing the site.

Deed recordation and notice provisions provide information to potential buyers and lenders and may prevent the transfer of environmental liability to the unsuspecting. An added benefit of disclosure is that it may lead to private party cleanup of the site either by the seller because of pressure from the buyer and lender, or by the buyer seeking to develop the property. Notices that rely on an owner's good faith and knowledge of the site, however, without requiring an audit of the property, may leave out important information. More useful than merely requiring notice of information known by the owner is the requirement that the owner prepare a disclosure document, such as in Illinois. By mandating the use of a detailed disclosure form, a state may obtain a comprehensive environmental assessment conducted by private parties and enforced by the potential means of a subsequent voidance of the transfer if the owner does not comply. Indeed, Illinois officials estimate that the majority of newly initiated RP cleanups in the state are connected to the environmental assessments conducted pursuant to property transfers. The key motivator behind these voluntary cleanups is the desire of the sellers, buyers and their agents to assess and mitigate contamination at the sites so that the transaction can go forward with maximum protection from liability for all parties.

Environmental Audits Or Assessments Prior To Sale

As the business community becomes more aware of the potential for tremendous liability under many different environmental statutes, lending institutions and purchasers are insisting on environmental audits or assessments of a property prior to sale, particularly in the absence of any state law requiring disclosure. These audits help detect problem sites. Because the parties are generally eager to consummate the transaction, investigative work and cleanups are often performed on sites which may not be scheduled to be addressed by the state for many years.

If a hazardous waste problem is suspected, the transferee and his lending institution have a vital interest in identifying its extent and in correcting it prior to sale. In order to take advantage of any "innocent landowner" defense that may be available to federal or state superfund liability, a prospective owner must make appropriate inquiry into the

conditions at the site before purchase. See 42 U.S.C. §9601(35)(B). If contamination is known or discovered, the buyer will often require cleanup as a condition of sale. On the other hand, the seller has a different interest in the transaction, and may want to remain in ignorance as to possible hazardous waste contamination or, affirmatively, to hide the fact. As the business and legal communities become more sophisticated in environmental requirements, mere ignorance of the presence of contamination is no longer a viable defense in property transfer situations. The seller can help avoid future fraud or misrepresentation claims, and share potential liability for hazardous waste cleanup, by making a reasonable effort to investigate and to identify potential hazards prior to sale. It should be noted that it may be difficult to distinguish whether voluntary cleanups are effectuated by the existence of the "innocent landowner" defense or by a state's disclosure requirements. It can be speculated, however, that the degree of documentation and cooperation from the seller may be greater in those states that mandate disclosure with the possibility of the avoidance of the sale, than would be achieved without such a requirement.

Some states have encouraged investigative work on the part of private parties by providing assistance in the audit process. The Minnesota cleanup program has established a voluntary property transfer review program that responds to file search requests from the business community on a particular property prior to its transfer. If hazardous waste problems are detected, the program may also provide investigation and cleanup assistance. The companies requesting a search are billed for the service. The Minnesota program plans to handle over 800 requests in fiscal year 1989 and as many as 1000 requests per year by 1991.

Other states have received requests for file searches or record checks, but do not have a formal process or budget for handling them. For example, in the last few years Colorado has experienced a significant increase in requests to the agency for record checks on facilities being sold or financed. Currently these requests are processed by the individual assigned to perform the PA/SI at the site. It is unclear how the state will handle the ever-increasing demand for this information without instituting a formal program and developing a plan for funding the processing of these requests. The benefits for establishing such a program can be enormous, for it encourages private parties to identify and investigate hazardous waste problems that otherwise would be left to the state to address.

Lien Provisions

Many state cleanup statutes grant the state a lien over an RP's property for the costs and damages for which an RP is liable. These lien provisions may serve to motivate private party cleanups because the potential imposition of a lien on the property can prevent or impede the issuance of title insurance or a mortgage.

The state lien provisions vary greatly as to property covered and priority of the lien. One of the most comprehensive lien provisions is found in Massachusetts, wherein any liability to the Commonwealth constitutes a priority lien (also called a "superlien") attaching to all real and personal property owned by an RP except that used for housing. New Hampshire's cleanup statute provides for a priority lien on real and personal property at the contaminated site as well as business revenues generated from the property. In other states, such as in Connecticut, a priority lien dating from the enactment of the superfund statute may only attach on the contaminated property. Still another variation on a state's cleanup lien is a provision like Pennsylvania's whereby a general lien with no priority attaches to all real and personal property of the RP.

The variations on lien provisions are practically endless. The most stringent provision, and therefore greatest deterrent to RP inaction, would be a combination of these statutes, providing for a priority lien on all real and personal property of the RP, not limited to its connection to the contaminated site. The least effective would be for a general lien to attach only to the site at which the state undertook cleanup. The motivation for RP participation behind these lien provisions is the same, however. RPs know that their ability to freely transfer their property will be affected if they allow the state to expend funds for investigation and remediation that will subject their property to a state lien.

II. VOLUNTARY PRELIMINARY ASSESSMENT PROGRAMS

There are many economic reasons why an RP would wish to perform voluntarily a preliminary assessment ("PA") of its property. In anticipation of a property transfer, corporate merger, or development of the site, an RP may want to expedite a PA at a site with low state priority; it may want to provide information to the state agency that would show that its site should be taken off the state list or inventory; or it may realize that

cleanup action is necessary and want to have an early impact on the final remedial plan accepted by the state. There are economic and environmental benefits to the state as well to having the RP perform the PA. Sites are addressed earlier than they would have been if left to the state, and the states save the costs necessary to perform the PA. The states must provide some assurance, however, that RPs will perform PAs thoroughly and accurately.

At least one state, Oregon, has a formal "Voluntary Preliminary Assessment Program" that facilitates and regulates the performance of PAs by willing RPs. The objectives of the voluntary PA in Oregon are to gain an understanding of the site, to determine whether there has been a release, to identify sites requiring immediate response or further action, and to identify sites requiring no further action. Under a written agreement with the state agency, the RP pays $2,200 to the state for agency oversight of the first two phases of a three-phased PA process. In the first part of the PA, the RP performs a historical record search of the site and of the waste handled there and prepares a report for the agency. The PA may be terminated at the completion of the first phase if the state agency makes a determination that there should be no further action taken. If questionable use of hazardous substances at the site is suspected, however, the RP must prepare a second report evaluating the exposure pathways and potential receptors for the hazardous substances. If the agency cannot make a determination of no further action at that point, the PA process moves to phase three which requires the RP to provide sampling and analytical data sufficient to enable the agency to determine whether there has been a release and whether further investigation is warranted. A parallel agency review of certain files and a site visit after completion of phase two help assure the quality of the RP-provided data.

While other states may encourage RP preparation of the PA informally, the advantages of instituting a formal mechanism for voluntary PAs are numerous. It assures consistency among PAs performed by various RPs and those performed by the state agency. RPs know exactly what is expected of them and what their short-term liability is. By establishing a fee system for PA oversight, the state agency recovers costs that can be spent on other aspects of the cleanup program.

III. PROPERTY DEVELOPMENT

Another prime opportunity for a state to establish an incentive for an RP (or even an innocent party) to perform voluntary actions is when the site is being considered for development. Local zoning boards or planning commissions may require assessments or investigations of a piece of property before permitting development. For example, a local zoning board in Oregon denied permission for the developer to develop property that contains sludge deposits. The developer is now performing a PA/SI to find out more about the potential contamination. In New Jersey, the Department of Environmental Protection has established a special unit to handle these "developer sites", which the state defines as properties at which someone not responsible for contamination is willing to remediate the site so that a new development can be established. These sites are often of a low environmental priority for cleanup and would not be addressed in the near term by the state. By establishing a unit solely responsible for these sites and funded by the developers through payment of DEP's administrative costs, more sites can be cleaned up at a quicker pace while at the same time obtaining the economic advantages of redevelopment of the property.

Thus, a state can take advantage of this economic incentive to have a clean property for development and can increase the number of voluntary PA/SIs conducted at state sites. Local zoning boards or planning commissions can deny development until an assessment and cleanup of the property is accomplished. In addition, a state can take advantage of a developer's wish to avoid environmental liability by facilitating and encouraging the voluntary performance of the PA/SI by the developer. To this end, the state could provide assistance in obtaining access to the property for the developer or provide oversight of the PA/SI process even though it is not considered a cleanup site.

IV. FINANCIAL ASSISTANCE TO RPs FOR CLEANUP

Another state innovation to encourage voluntary RP cleanups is for the state to provide financial assistance for voluntary cleanups. The Oregon superfund program established its Financial Assistance Program in 1989. Under this program, the state loans money from the state hazardous substance fund at negotiable interest rates and terms to

marginally solvent RPs. Pennsylvania also authorizes its Fund money to be used as loans to assist industries in cleaning up sites, but limits the total amount available for this purpose to $100,000.

While a financial assistance program ties up state money in the short term, litigation costs are avoided, interest is earned, and sites are remediated faster. It is too early in these programs to determine if such financial assistance will have a positive impact on RP participation. Such assistance would appear to be most beneficial for those small companies who are willing to remediate their property, but who lack the necessary resources up front to accomplish the task.

V. PUBLICITY

The business community is always sensitive about its public image, and states can use that sensitivity as an incentive for voluntary cleanups. Many states, usually under legislative mandate, prepare a state hazardous sites list or inventory with either confirmed or suspected contamination. Publication of this list alerts citizens to hazardous waste sites in their communities and puts RPs who own those sites in the position of defending their good image within the community. To protect that public image, RPs will often decide to participate voluntarily in the investigation and remediation of a site on their property rather than let the site languish on the state list until the state acts against the RP. For example, after North Carolina published its Inactive Hazardous Sites Inventory in May 1989, approximately twenty companies immediately approached the state with an interest in voluntary cleanup or in submitting further site data that would remove the site from the Inventory. Negotiations are now underway with these RPs.

After publication of a list of sites with suspected contamination, some RPs whose sites are listed may volunteer to prepare the preliminary assessment or site investigation. The impact from publication of a state hazardous sites list is reduced, however, if it is difficult to place a site on the list or if an RP has an opportunity to contest the inclusion of its site, as is the case in Iowa, Oregon, and other states. An RP might decide that its energy and resources can be better spent trying to contest the listing rather than cleaning the site to achieve delisting. Moreover, publication of a state inventory will generally have

an impact only on those RPs who are most financially viable and concerned about their reputation with respect to the protection of health and the environment.

VI. PERMIT BARS/PERMIT REVOCATIONS

Another state tool that can be effective in achieving voluntary participation by RPs in the investigation and cleanup of a hazardous waste site is the permit bar (also called a "permit block"). A permit bar authorizes the state to deny a permit (or a permit modification) based on the applicant's violation or history of violation of environmental laws. Pennsylvania and Maryland both have permit bar provisions that authorize permit denial if an applicant has at any time or location committed a violation of any state law, rule, order or permit concerning hazardous substances. (Pennsylvania also allows denial if a federal environmental law has been violated.) Assuming a violation can be established, these states can use this discretionary authority to hold up or deny a permit until an applicant has investigated and/or remediated a site. Both states make frequent use of these provisions to obtain compliance. Even states that contain provisions requiring the agency to give "consideration" to an applicant's compliance history when deciding to grant or deny a permit may be able to use the permit process as leverage to obtain voluntary cleanup of a superfund site.

Such a permit bar recognizes the strong economic incentive for obtaining the permit, and uses that incentive to pressure an RP into correcting a problem that may be unrelated to the facility for which the permit is sought. Even in states that do not have permit bar provisions, state superfund agencies should recognize that an RP's application for a permit may provide a perfect opportunity to exert some pressure for voluntary action with respect to an RP's superfund site. The state can only take advantage of this opportunity, however, if the permit and superfund sections communicate and work together.

Of course, the threat of revoking an existing facility permit is also a useful enforcement tool in obtaining compliance with a state's cleanup requirements. For example, the New Jersey Spill Act authorizes the state to revoke a solid or hazardous waste facility permit for violating a Spill Act directive to clean up a hazardous substance discharge. The threat of losing one's ability to conduct business may be a strong economic incentive for complying with a state's cleanup order. For further discussion on permit suspension and

revocation as an enforcement tool, see "State Hazardous Waste Enforcement Study," prepared by the Environmental Law Institute for the Office of Waste Programs Enforcement, RCRA Enforcement Division, U.S. Environmental Protection Agency, October 1987.

VIII. CONCLUSION

There are many mechanisms that a state may adopt to encourage RP voluntary participation in the remediation process, and many states are leading the way in employing these tools. While the advantages from instituting and using these incentives may be difficult to quantify, most state officials believe that voluntary RP participation is essential to the cleanup program, and it appears that these mechanisms help foster that participation. A "model" cleanup statute would likely contain a combination of the incentives discussed above, ranging from the most coercive requirement that the department approve of site transfers to programs that facilitate a private party's preparation of an environmental audit and/or preliminary assessment.

CHAPTER FIVE

PROGRAM ORGANIZATION AND SITE MANAGEMENT STRATEGIES: COORDINATING CLEANUPS EFFICIENTLY

The quality and scope of a state program hinge on the reliability and level of funding, staff size, and the legal and financial tools available to encourage RP participation in the cleanup process. In addition, strategic planning and management approaches have an important bearing on program success.

This chapter examines how differing approaches to program implementation and differing program strategies can influence resource allocation, and how staff resources can be marshalled to achieve program goals.

I. THE INFLUENCE OF PROGRAM IMPLEMENTATION ON RESOURCE ALLOCATION

From site discovery to remedy selection and cleanup, the resource needs for each step of the cleanup process are largely determined by the results of the previous steps. The key decisions during the cleanup process are reviewed in this chapter relative to their potential impact on staff and funding levels.

Site Discovery

Site discovery efforts reveal the extent of the abandoned hazardous waste problem in a state, identify problems needing further study or action, and allow a state program to determine if actions are necessary to address human health and environmental risks. As the first step in the cleanup process, site discovery is capable of both consuming and conserving resources and staff for state sites.

Site discovery approaches among states range from passive to active. Passive site discovery programs as in Colorado and New Hampshire rely on citizens, landowners, and local officials to identify and report sites. The Oregon Department of Environmental Quality (DEQ) uses an intermediate approach by reviewing state documents for clues about undiscovered sites, as well as responding to referrals. More active approaches by states such as North Carolina include document searches, investigations and inspections, and the

use of mandatory disclosures for land owners. There are both advantages and disadvantages to passive and active site discovery efforts.

Passive Discovery

The greatest virtue of passive discovery is the minor up-front demand it places on program resources, an important consideration as the federal government does not fund state discovery efforts. In addition, supporters of passive discovery contend that the worst sites are probably uncovered without active state searches, arguing that resources are better used in other program components like remedial investigations or remedial actions.

There are also disadvantages to passive site discovery. For one, state planners risk missing seriously contaminated sites, or they may not learn the full breadth of their hazardous waste problem. More complete information about the extent of a state's hazardous waste problem could enable program officials to make more effective appeals to their respective legislatures on staff and funding needs. Further, passive discovery programs may not find sites until they have reached a critical stage, resulting in possible acute risk and the need for an emergency response.

Active Discovery

Active site discovery efforts are likely to uncover more sites earlier than passive efforts. Also, if actions at these sites are taken relatively early, states can potentially offset future remedial action costs that may increase as the site is left unaddressed over time. Another advantage to active site discovery efforts is that states might gain better knowledge about the nature and breadth of their total hazardous waste problem. This knowledge can be used by states to forecast resource and staffing needs, to set priorities for addressing the worst problems first, and to persuade legislators to better match funding with the size of their problem.

As with passive discovery approaches, active discovery approaches also have disadvantages. For example, active site discovery efforts may divert some of a state's resources from remedial investigations and cleanup, thereby delaying progress on previously identified sites. Because many states have a large backlog of discovered sites awaiting further attention, it can be argued that further discoveries are somewhat gratuitous. That is, newly discovered sites may not be addressed in a timely fashion because of the backlog.

The assumption that the worst sites have already been discovered, coupled with the backlog problem, may be reasons why many states have opted to use more passive approaches to site discovery.

As discussed in Chapter 4, in states like New Jersey, Illinois, and Minnesota, certain disclosure, recordation, and environmental assessment/audit requirements must be met before property is transferred. Such state requirements serve as a partial substitute for an active site discovery program, identifying more sites than would a purely passive approach. Because prospective buyers and their lenders have an interest in avoiding the liability that is attached to contaminated land, there is considerable incentive and willingness on their part to perform and pay for these preliminary activities and, in some cases, a voluntary cleanup. These private party efforts relieve state resources and staff that may then be concentrated on other program areas, while still maintaining a somewhat active discovery approach.

Pre-remedial Screening and Site Listing

The purpose of pre-remedial screening and site listing is to select sites for further action. Many states have chosen not to adhere strictly to the Hazard Ranking System (HRS) used by the federal EPA, instead scoring sites according to their own criteria or using a variation of the HRS. For example, the Illinois Environmental Protection Agency (IEPA) uses the HRS but lists any site scoring 10 or higher, whereas the federal EPA lists sites scoring 28.5 or higher. Among other things, the IEPA scheme downplays the federal emphasis on potential exposure of large populations. Some states like Michigan place higher emphasis on natural resources. There, the Department of Natural Resources (DNR) makes groundwater remediation a high priority, regardless of the size of the affected population.

States commonly employ objective pre-remedial and site listing approaches by using specific criteria and defined ranking systems. A notable exception to this trend is Montana's subjective ranking system. Using a list of unquantified criteria such as potential or actual groundwater contamination, threats to wildlife, and the potential for explosion, the Montana Department of Health and Environmental Sciences (MDHES) determines if sites are high, medium, or low priority or whether they require no further action.

States such as Montana with few resources or sites may choose to avoid extensive pre-remedial screening and site listing efforts. Though this approach may conserve resources in the short-term, it does not provide a strong basis for making effective risk-based decisions about site ranking or appropriate resource allocations among sites. Without more defined information about the extent or severity of risk at a site, state officials may be prone to direct their attention, and perhaps funding, toward sites where public pressure is heavy, rather than to sites of highest risk. In short, defined scoring systems such as the federal HRS presumably identify the worst sites by some kind of objective measure, can serve as a means of imparting the relative risks of sites to the public, and provide better information for prioritization and resource allocation.

Lacking resources or staff, a state program may wish to limit its listed sites as a means of concentrating on its worst problems. The New Hampshire Department of Environmental Services (DES) has reversed its previous policy of comprehensive site listing in the last several years. Claiming to have identified its worst sites, state officials place a higher priority on listed sites, while deferring threats that may exist at unlisted sites. Actually listing sites is not as critical if a state maintains a commitment to site discovery. However, programs that are lax in both site discovery and listing may not be addressing the state's total hazardous waste problem and may not be effectively planning for, or informing their legislature about, future funding and enforcement needs.

A continuous and active site listing program can drain resources needed for other activities such as RI/FS, oversight, CERCLA match, or O & M. However, investing in certain site listing approaches may not be extremely resource intensive and can have long-term payoffs, resulting in efficient use of state resources. Some states use site listing approaches that cause RPs to respond early, at the listing stage, to avoid the negative publicity of being associated with a hazardous waste problem. In fact, RP-led remedial work has begun at sites that officials oversee but leave unlisted, as long as RPs continue to conduct work.

For example, in Pennsylvania the Hazardous Sites Cleanup Act requires the state program to give RPs notice 90-days prior to listing, and sites may be delisted if RPs enter into settlements in which they agree to conduct site cleanup. States like Illinois have found that notice letters and listing are sometimes enough to elicit RP response. Similarly, when North Carolina published its Inactive Hazardous Sites Inventory in May 1989, about 20

companies approached the state expressing an interest in voluntary site cleanup or the chance to submit further information about sites in the hope that some would be delisted. These types of listing policies can effectively draw in RPs wishing to avoid public notice and thus poor relations with the community. The state must balance its interests in obtaining RP participation against the loss in public accountability from such practices. On the other hand, the New Hampshire policy virtually eliminates the option for this type of strategy. Without some degree of commitment to continuous listing, RPs have little incentive to reveal or remediate sites that the state has no intention of listing.

A state may choose not to list a site in its cleanup program, choosing instead to use other authorities that may be stronger or supported by larger funds. For example, state RCRA or clean water authorities may prove the mightier hammer to induce RP response, and program planners may wish to exploit these other authorities first. These approaches are discussed more thoroughly in Section II of this Chapter.

Investigation In Support of Remedy Selection

State-led RI/FSs are costly program efforts that can strain a state's resources or work capacity. When RPs or their contractors conduct an RI/FS, a state's resources and costs shift to RP oversight. States may choose variations on the RP-led RI/FS theme, such as allowing RPs to conduct only the RI, while the state conducts the FS. Because the FS is the key step preceding remedy selection, many state officials argue that it should be conducted by the states, regardless of RP ability or willingness to conduct it. Also, FSs are typically less expensive than RIs, representing a lesser drain on state resources. Because of the resource burden of RI/FSs, however, states with numerous orphan sites may hesitate to conduct RIs or FSs at sites where RPs are willing and able to do so. The advantage of the state performing the RI or FS may be offset by the resource burden under this circumstance.

There are other approaches that can save time and resources on FSs. For example, the Minnesota Pollution Control Agency (MPCA) is considering the use of a generic FS process. MPCA officials contend that there are consistent remediation requirements for certain groups of sites, and they hope to reduce the time and resources spent on the FS by standardizing the process.

Remedy Selection and Cleanup

Remedy selection and cleanup decisions are important program organization issues, because they impinge on staff time and resources before, during and after remedial action. This section covers two aspects of remedy selection and cleanup as they bear on program organization: (1) the value of a community relations staff, and (2) remedy selection and cleanup criteria as they bear on present and future staffing and resources.

Community Relations

This study revealed that few designated community relations staff exist in state superfund programs. In most instances, project managers handle public and press inquiries about site progress, remedy selection, and other issues. Often, states rely on regional EPA offices to conduct community relations efforts for their NPL sites. There are, however, several noteworthy state community relations programs--including those in Illinois and Minnesota--that lend credibility and enhance public communications for their remedial programs.

The Illinois Environmental Protection Agency (IEPA) community relations staff, which reports directly to the IEPA Director, is used extensively by the Remedial Program Management Section (RPMS). Eight community relations staff work closely with project managers to stay abreast of progress at roughly 160 sites. The community relations supervisor directs the staff to communicate with project managers at least once every three days.

The IEPA community relations supervisor stresses several reasons for creating such programs. First, the public should be educated about the health and safety threats posed by a site and the remedial actions planned to correct them. As part of this effort, IEPA has printed detailed fact sheets on the hazards and other characteristics of 50 common chemical contaminants, the status of specific sites, and the details behind chosen remedies for specific sites. IEPA holds public meetings to answer questions for residents near sites. This sort of public education by the community relations staff frees project managers from this time-consuming task.

A second reason for establishing a community relations program is that the public adds information about sites when they are invited to participate in the process. In Illinois, citizens have identified RPs after state officials could find none. Public comments have

even helped improve remedial action plans when local features about a site or its surrounding area were noted by citizens.

Of course, the public has an opportunity to comment in most states, but the Illinois program encourages a well-informed public, which fosters public trust, encourages information exchange that potentially aids the state agency, and may lead to especially useful public comments. Officials in the RPMS stress that controversial remedial selections such as incineration have met with greater public acceptance and less anxiety as a direct result of community relations efforts.

In Minnesota, a Public Information Officer is assigned to each active site to handle press and public inquiries. A staff of three such officers is responsible for all public information on superfund sites there. A few states, such as New Hampshire and Pennsylvania, are considering or have hired separate community relations staff for their state cleanup programs. Colorado has already done so for its CERCLA natural resource damage sites.

In some states, extensive public participation requirements are akin to small scale community relations programs. Oregon's statute, for example, requires its Department of Environmental Quality (DEQ) to notify all daily and weekly newspapers and all broadcast media of potential and actual releases of hazardous waste. DEQ must provide public notice of proposed remedial actions, allow at least 30 days for written comments, consider those comments, and conduct public meetings if at least 10 people have requested it. Approved remedies must be published, and DEQ is required to provide notice and comment on its cleanup settlement agreements.

Remedy Selection and Cleanup Criteria

In the context of program organization, remedy selection and cleanup criteria can affect staffing and resources requirements necessary for site remediation. Extended or resource intensive remedies often consume more resources early, but they may save significant operation and maintenance (O & M) costs over the long-term. Limited remedies save resources early, but they may necessitate greater O & M expenditures later. For instance, containment-based remedies are by their nature less expensive than treatment-based remedies but, when the entire life of a site is considered, may ultimately require more

funding.[80] Few states have many sites in the O & M phase, raising the possibility that some program planners may not yet realize the tremendous staff and funding requirements for these sites in the coming years. State officials will need to consider the relative resource requirements for site action--both during and after remedial action. A clear view of growing O & M costs is an important part of that assessment and will need to be understood before staffing and budgets can be figured accurately.

Under the 1990 NCP, EPA now covers O & M costs for up to 10 years for federal Fund-lead sites undergoing groundwater or surface water restoration. Under the 1985 NCP, O & M costs for such remedies were only covered by the federal government for one year. The remainder was covered by the states, but now state O & M payments for NPL Fund-lead sites can be delayed for an additional nine years under the new federal policy.

Many states determine cleanup standards on a case-by-case basis, requiring staff to research appropriate technical standards for each site. An up-front investment of state resources and staff may be needed to develop and establish overall cleanup criteria or standards. However, in the long-term, such standards can provide efficiency and a savings in staff time and resources. There may be cases where cleanup criteria or standards (such as state ARARs) can relieve the state planners from conducting risk evaluations for each remedial action plan. For example, IEPA maintains a consolidated list of state ARARs, which state officials contend conserves time in evaluating and determining site remediation goals.

II. INFLUENCE OF PROGRAM STRATEGIES ON RESOURCE ALLOCATIONS

The coordination of program functions depends largely on how a state organizes its sites and risks. In this section of the chapter strategies for addressing sites are divided into categories commonly used by states, not all of them mutually exclusive. The basic distinc-

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80. The Regulatory Impact Analysis (RIA) prepared for the recently amended National Oil and Hazardous Substances Pollution Contingency Plan (NCP) determined that containment-based remedies were more expensive than treatment-based remedies when the life-time O & M costs for both kinds of remedies were included. In brief, containment-based remedies are more likely in the long-term to fail or to require closer monitoring than treatment-based remedies.

tions are RCRA (or RCRA-like) versus CERCLA cleanups, removals versus remedial actions, NPL versus non-NPL cleanups, and enforcement-lead versus fund-lead cleanups. Each of these distinctions relates to program coordination and organization.

RCRA/CERCLA

Some states lack funds for the remediation of abandoned hazardous waste sites (e.g., Nebraska, Delaware) or lack state authority to compel cleanup of non-permitted facilities. Thus, many states must rely on RCRA or RCRA-like authorities to compel cleanup of any kind. As noted in An Analysis of State Superfund Programs: 50-State Study, 13 states rely on RCRA, solid waste, or water quality authorities to offset a lack of "superfund" authorities or resources. Other states use similar authorities to bolster their superfund tools. Using such authorities is a logical option for states with no "superfund" programs or for states wishing to supplement the legal and financial provisions of their hazardous waste remediation statutes.

Though state programs generally do not separate CERCLA and RCRA programs as distinctly as the federal government, they need to consider a variety of issues--such as funding sources and their restrictions, the potential for pre-enforcement review, staffing and resource levels, and potential statutory limitations on cost recovery--when they decide to integrate or separate the different statutory elements in the composite cleanup program.

Each state should evaluate its statutory and programmatic strengths and weaknesses to determine if and how RCRA/CERCLA elements might function in relation to each other in order to expedite site actions. To use a simple example, Colorado officials may choose to exploit their RCRA corrective action order authorities on sites for which the state is unable to provide the CERCLA match. In Texas, a RCRA-based request for action may circumvent the threat of RP appeals, which are permitted under the state superfund statute.

A RCRA-based enforcement program requires different staff resources than a CERCLA-type program. For one thing, staff will be dealing with a limited universe of RPs (viz. the owner/operator). For another, the effort may need to be coordinated with active permitting of operating hazardous waste units. This coordination function suggests use of a team approach of cleanup personnel and permit writers.

NPL/Non-NPL

Many state programs are legally or effectively required to focus on non-NPL sites, while other states choose or are compelled to concentrate on NPL sites. The advantages and disadvantages to either approach are important.

Targeting NPL sites is an understandable strategy for states in many regards. First, NPL sites are commonly the most seriously contaminated sites in many states. Conversely, non-NPL sites are often orphaned and usually represent lesser site-specific risk than NPL sites, making them lower priorities. Second, even well-funded state programs possess finite resources, encouraging them to focus on their largest and worst sites, as well as those sites with multiple RPs, and these are generally the NPL sites.

On the other hand, NPL state match requirements may be large enough to limit severely uses of state monies on other sites. This is especially problematic if a state's non-NPL sites are numerous or represent a larger aggregate risk than the state's NPL sites. Also, state preferences for enforcement or remedy selection may be compromised by targeting the federal sites. Each state needs to determine its priorities with consideration of its ability to match CERCLA funds and its desire to target non-NPL sites which may present a larger problem in the eyes of state officials or the community.

In Colorado, 95 percent of the Hazardous Substances Response Fund, which is the primary fund for remedial costs, must be used for state match money on NPL sites; the remaining 5 percent of fund monies may be used for administrative costs. These requirements effectively prevent the development of a non-NPL superfund program in Colorado. Currently, the state has 16 NPL sites and 345 non-NPL sites. The statutory limit on the use of the Colorado fund may in fact be preventing state officials from addressing what might be a larger aggregate environmental problem.

For different reasons, Texas has a marginal non-NPL program. Though not required by statute, the Texas Water Commission (TWC) clearly focuses on NPL sites. Only five of twenty-nine staff positions in the lead superfund section perform non-NPL work. In addition, this small unit lacks field and technical support and has no capacity for RP searches. Though the TWC may be acting on what it perceives to be a larger threat from its NPL sites, its failure to balance better its non-NPL staff and resources with those of its NPL program may be hampering its ability to define and better characterize the non-NPL

sites. This approach may result in misjudging the extent of the non-NPL problem, which in turn may result in risks that are not being appropriately addressed in a timely fashion.

Removals/Remedial Actions

Some states may not use state cleanup Fund monies for removals (Arkansas, Colorado, West Virginia, Wyoming), and others may not use them for non-NPL remedial actions (Georgia, Hawaii, Nevada, West Virginia, Wyoming).[81] Restrictions on either activity require creative planning for states hoping to see their sites through the entire cleanup process.

States not authorized to conduct remedial actions may choose to concentrate on enforcement and site oversight. States with this restriction may also use a remedial/ removal hybrid, known as a "removial," which allows them to stabilize sites through a simplified remedial planning process. Removials may also delay the need for remediation at some sites, an important consideration for states with limited staff or funds. In fact, conducting more removals or removials may be an effective option at some sites to contain site contamination until full remediation can take place. Because removals commonly eliminate the immediate threat on sites, and because they typically cost far less than remedial actions (several hundred thousand dollars versus $5-20 million), removals and removials (which may cost up to $2 million) are a valuable interim measure that can be used more often by states with limited funds.

For states unable to conduct remedial actions, there are several options in addition to removals, such as a hand-off to the federal program, aggressive enforcement, or the use of other corrective action authorities when available.

Enforcement-lead/Fund-lead

The enforcement-lead/fund-lead distinction is the sharpest on the federal level; it is not as important on the state level. Perhaps due to their smaller size compared to the federal program, even large state programs such as New Jersey's are generally able to switch the lead on their sites as conditions warrant. The scope of the federal program

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81. An Analysis of State Superfund Programs: 50-State Study. As discussed here, the inability to use funds for select activities arises by either statutory omission or specific prohibition.

makes switching less easy, but any state stressing this distinction as a way to plan staff and funding on sites needs to consider the delays such a distinction may cause.

Assuming a site will require fewer resources or less staff time because it is an enforcement-lead may be a mistake. Poor information tying RPs to sites, RP recalcitrance, sites with multiple small RPs, the need for extended oversight, and the likelihood of protracted negotiations all place great resource burdens on enforcement-lead sites. Federal remedial project managers (RPMs) on enforcement-lead sites have commonly remarked that these sites can require more administrative time than fund-lead sites. As a result, officials in state programs should assess the number of sites their staffs can realistically address, without assuming that enforcement-lead sites will lessen administrative burdens merely because RPs may conduct more on-site activity.

III. STAFFING APPROACHES

There are at least three general approaches for managing the site cleanup process: 1) the RPM/contractor support approach, in which each site is managed by a single RPM who is supported by contractors for the variety of technical and administrative site tasks; 2) the team approach, in which managerial, technical, and enforcement personnel coordinate their efforts in a planned, organized manner; and 3) the expert approach, which is a hybrid between the first two in which project managers coordinate other experts and rely heavily on each other. The last two approaches may use contractor support, but their basic organizational thrust continues to rest on internal coordination.

The RPM/Contractor Support Approach

The RPM/contractor support approach assigns a single RPM to manage all aspects of superfund site responsibilities. Often generalists (or experts in only one field), such RPMs are assisted by contractors for the variety of technical, managerial, and enforcement tasks that attend each site. Thus, with this approach, single RPMs typically coordinate site sampling and assessment activities, PRP searches, site investigations, remedial planning, and other activities through the efforts of their contractors. The perceived advantage of this approach is that it gives full responsibility for a site to one individual, who becomes expert on the gamut of issues that surround the given site.

The most obvious disadvantage of the RPM/contractor support approach is the numerous tasks it places on one individual. This disadvantage has in part spurred the federal EPA to modify its own approach by increasing the technical assistance available on staff. Many state programs studied for this report, including Texas, Colorado, Pennsylvania, and New Hampshire, appear to be recognizing the difficulty of assigning so many varied tasks to one person.

The second major disadvantage of this approach is that the institutional knowledge of a site is effectively lost if the single RPM departs from the program. Both the federal EPA and the states have noted this in interviews. Some states using the RPM/contractor support approach, such as Illinois, have been fortunate enough to experience low turnover, but the federal EPA and a variety of other states have suffered from such RPM turnover.

On the other hand, states with few sites may not have a pressing need to form site teams or develop integrated expert approaches such as in Oregon. As a result, the RPM/contractor support approach may be more useful for very small programs or those with few sites. Moreover, this approach can be modified into a team or expert approach fairly readily, which may be an asset for small- to medium-sized programs that are expanding.

The "Team" Approach

Though many programs effectively function in a team-like manner, a few states have unusually integrated programs in which technical, managerial, and legal personnel combine their efforts with particular success.

As officials in the Minnesota program have noted, there are two principal advantages to a team approach. First, individuals may focus on their area of expertise while combining their skills with other staff members in the negotiating and site management teams. Rather than forcing experts to learn the specialties of their colleagues, they work together while concentrating on their respective fields. In a successful team approach, therefore, an engineer will not spend inordinate amounts of time on budgeting, information management, public relations, or evaluating enforcement options when other specialists can handle all of these functions more knowledgeably and efficiently. Such an approach introduces a potential problem of team coordination, but this can be handled by the project manager.

As noted by Minnesota officials, a second advantage of the team approach is that it mitigates the disruptions caused by inevitable staff turnover. Namely, when a group of individuals is involved in any site, the loss of any one represents only a partial loss in the institutional knowledge of that site. When a program still possesses two, three, or more people continuing to work on a site, the accumulated knowledge of that site is not lost with the loss of one program member.

The invariably protracted histories of most sites argue in favor of team planning. Sites commonly have histories in excess of ten years, and few project managers remain in those positions that long, even if they remain with their respective agency. Comparing average staff turnover rates with the average duration of site history makes a strong argument in favor of more integrated program and site management efforts. This would prevent the disruptions that stem from losing highly trained and experienced individuals which, as noted, is one of the great disadvantages of the single project manager approach. In addition, disruptions caused by the loss of managers in the single manager approach not only result in delays, but they hurt an agency's credibility when site work halts in mid-stream.

Minnesota Model

The Site Response Section in the Minnesota Pollution Control Agency (MPCA), which bears the largest superfund workload in the state, uses an integrated team approach. Each site is assigned a Project Manager, a Technical Analyst, an On-Site Inspector, a Public Information Officer (PIO), an attorney, and sometimes an engineer. According to MPCA officials, these teams engender continuity and promote consistency throughout the superfund program. Team members work on both fund- and RP-lead sites, which fosters useful exchanges of knowledge and contributes to consistency in MPCA efforts across sites.

The Project Manager is the central member of each team, coordinating activities, budgets, and work schedules. Also, MPCA project managers serve as the general site contact people. The range of expertise assigned to each site allows Project Managers to focus on the management issues relating to their sites. In addition, Project Managers are the official MPCA representatives in negotiations with RPs, though they are typically assisted by their unit supervisor, an attorney, and a technical analyst. Responsibilities among team members are clearly defined, and members are generally drawn from the same

unit. (There are five units working on superfund in three sections, all in the Division of Groundwater and Solid Waste.)

New Jersey Model

The DEP program has been structured to ensure that case management teams are given sites appropriate to their expertise. In particular, the Bureau of Planning and Assessment assigns sites to the proper program element after completing a preliminary on-site investigation and RP search. Divided into a variety of elements because of its sheer size, the New Jersey program assigns the bulk of its work to either the Responsible Party Cleanup Element or the Publicly Funded Cleanup Element. Both of these elements use case management teams, which typically consist of a manager, a technical coordinator, and a geologist.

Based on its review, the Bureau assigns and then tracks sites through the program, which promotes consistency in site management and progress. Whether in negotiations, study, remediation, or enforcement, the Bureau of Planning and Assessment acts to direct site efforts in a consistent manner. When necessary, sites switch easily from one element to another. Those assigned to the Responsible Party Cleanup Element have separate negotiation teams, which free managers from that process to continue resolving on-site issues.

The magnitude of the New Jersey program allows a unique division of labor that may or may not afford actual program benefits. Yet the very ability to switch sites from fund- to enforcement-lead enhances the leverage that DEP can use to motivate RP action. As a result, the relatively rigid distinction between these approaches created in the federal program has less potential to stymie negotiations or funding for New Jersey sites, regardless of how circumstances unfold. This is an obvious asset for the New Jersey site management teams.

The "Expert" Approach

As mentioned earlier, the expert approach is a hybrid between the first two. Through RPMs collectively, sites are managed in a way that exploits their varying expertise as needed at sites--not merely to ones that they have been arbitrarily assigned. Thus, in the expert approach, a site may have a single RPM taking the lead on activities, but that

RPM is not the only one who works on the site during the lengthy remediation process (from discovery to final O & M).

Oregon Model

The use of project managers in the Site Response Section in the Oregon Department of Environmental Quality (DEQ) represents a unique hybrid of the RPM and team approaches. When the DEQ program began, one project manager was responsible for all aspects of his or her assigned site. Technically proficient in only one field, however, the project managers were forced to coordinate with managers trained in other fields to fulfill RI/FS efforts such as site and risk characterization. As a result, project managers were expending considerable time on sites not assigned to them. This situation created coordination problems, confusion in accountability, and a decline in staff morale. Moreover, under this scheme, project managers were not credited with time spent on other projects.

Recently, DEQ devised a new system where project managers devote 60% of their time to their sites, 30% of their time to assist and consult with project managers assigned to other sites, and 10% of their time to training. In effect, a staff member serves in part as a project manager and in part as an "expert" in his or her field available to other project managers. This system has eased the RI/FS review process, oversight, information exchange among project managers, and markedly improved staff morale.

As the Oregon experience suggests, the expert approach has the advantage of combining staff expertise at sites. This kind of coordination broadens the experience and perspective of RPMs in a program, and it allows them to make more optimal use of the collective staff expertise among sites. It also encourages professionalism of the staff, and rewards expertise. The most obvious disadvantage this approach faces, however, is an increased need to coordinate sites among a larger number of program staff, which limits the amount of time that any individual can spend on a single site.

The optimal choice or mix of either single RPM or team approaches is best decided by individual state program planners, but not many appear to conduct broad assessments of what this optimal approach might be in their states.

IV. CONCLUSION

Programs may emphasize different stages of the remedial process. They may also target different types of sites. Both of these choices will influence staffing patterns and organization. An organization focused on performance of the FS phase will require different resources from one that is primarily engaged in oversight of RPs. Likewise an organization geared to NPL sites may not reflect the disciplines or resources needed for non-NPL sites.

Community relations staffing can be highly beneficial to a state program, in terms of both community acceptance of state action and information benefiting the cleanup process.

Staffing organization has taken essentially one of three approaches: the RPM approach, a team approach, or an expert approach. Experience in the states has shown that there is much to recommend the latter two approaches.

CHAPTER SIX
ENHANCING STATE CAPABILITIES

I. INTRODUCTION

Building state cleanup capabilities must be done in terms of the goals a program sets. Specifically, a state's capabilities are only relevant with respect to the goals that state is attempting to achieve. Thus, for example, if a state program decides that its primary objective is to support federal efforts at NPL sites, it will have a different set of funding, staffing, and organizational needs than a program that attempts to discover and address all hazardous waste sites. The validity of a state's choice of goals is not addressed in this report. Such a choice is properly made by the legislative process as informed by state agencies, citizens' organizations, or other interest groups.[82]

As noted in Chapter One, program goals can be delineated in terms of the types of risks of concern, the level of mitigation at each site, the number of sites addressed, and the pace of cleanups. This report does not attempt to identify a preferred set of goals. Unlike many federal environmental statutes, CERCLA does not involve development of federal regulations that state programs subsequently implement. Rather, each state sets its own priorities for hazardous substance site cleanups. Thus, apart from NPL sites handled by states under cooperative agreements, program goals can, and in fact do, vary from state to state.

This chapter identifies alternative approaches that states might use to achieve their program goals. It does not prescribe a preferred approach. Instead, it sets out alternatives with respect to various goals and differing resource levels.

Although the typical cleanup process might entail several discrete steps, it can be divided into three stages: (1) discovery; (2) remedy assessment and selection; and (3) construction (see Figure 6-1).

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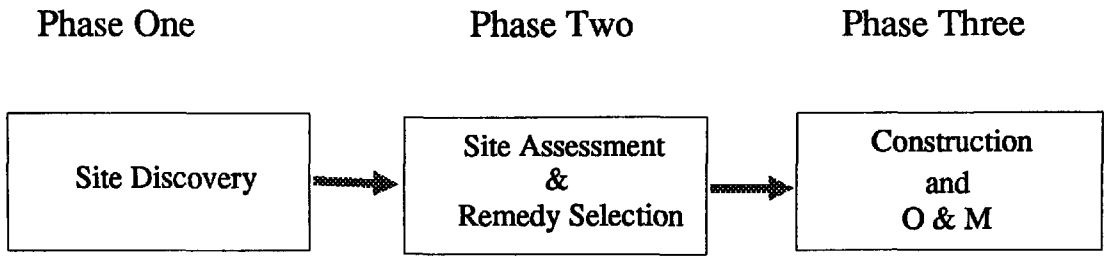
82. Such a choice might also be made federally <u>if</u> CERCLA were to become a "delegated" program.

FIGURE 6-1
STATE CLEANUP PROCESS



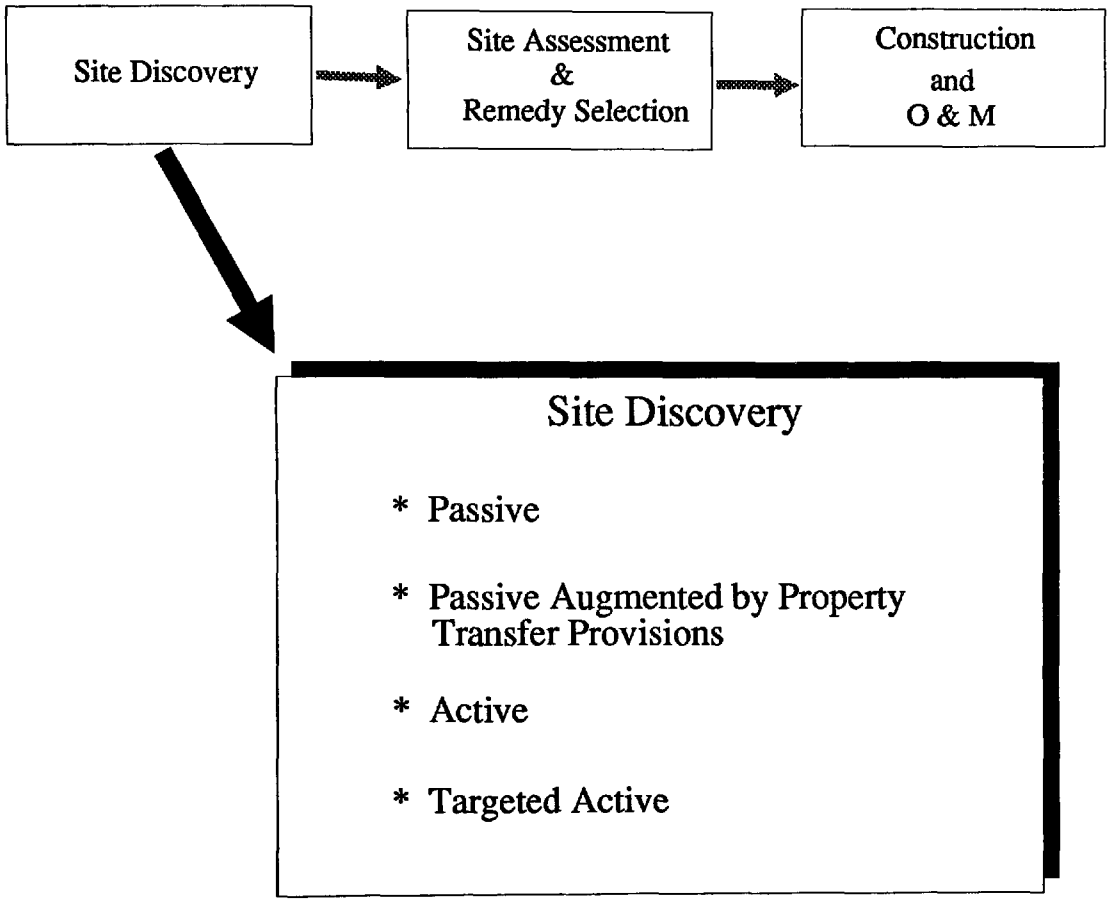
The next two sections of this chapter discuss alternative approaches for the first two stages. Although the third stage embodies interesting policy questions, particularly concerning the financing of O&M and the relationship between O&M costs and alternative remedial action options, these issues were not addressed in the study. Section IV of this chapter briefly discusses the implications of alternative approaches for EPA and state program managers.

II. DISCOVERY

States do not have trouble finding sites. A program receives complaints or otherwise receives referrals of potential sites. In fact, most states have identified hundreds, if not a thousand or more sites. Yet, there is concern that many more sites have not been discovered to date. Chapter Five briefly described two alternative approaches to discovery--active and passive. This section refines that analysis, discussing four discovery approaches and (a) the extent to which they promote program goals, (b) their resource requirements, and (c) their use in the life-cycle of a cleanup program. See Figure 6-2. The four approaches to discovery are:

- Passive
- Passive augmented by a property transfer program (passive/property transfer)
- Active
- Targeted active.

FIGURE 6-2
ALTERNATIVE APPROACHES TO SITE DISCOVERY



Passive discovery has been the favored approach in the majority of states. Sites are identified through complaints, referrals from other agencies, and self-reporting. No particular resources are devoted to identification of possible sites. **Passive/property transfer** is similar to the passive approach except that additional sites are discovered through the environmental auditing or disclosure provisions of property transfer laws or programs. Site owners engaged in transactions are required to report on the presence of hazardous substances on their property and on cleanup status. **Active** discovery searches for potential sites and includes activities such as reviews of other agency files and permits, and analysis of aerial photographs, historical zoning maps, recorded deeds, tax records, etc. A **Targeted active** program is like the active approach but is targeted to protect particular important state resources (e.g. regional aquifer systems) or focused on certain economic sectors with relatively high probabilities of hazardous waste contamination.

Goals Achieved

These discovery approaches have differing implications for the meeting of state program goals--particularly the goals relating to the number of sites and the types of risk that the program intends to address. An active discovery program clearly will discover the most sites, and put them into the pipeline for consideration for possible cleanup. The more sites that are discovered, the greater the likelihood that the most risky sites will be identified and acted upon. A passive discovery program, in contrast, will discover the fewest sites. However, it may identify those where public concern is the greatest, and thus meet perceived needs for cleanup adequately; unfortunately, it may also leave particularly hazardous or risky sites undiscovered. The passive/property transfer approach may identify a significant number of sites, but the number is wholly dependent upon the level of economic activity in the state (occasioning the transfers). Property transfer-based discovery does not distinguish among sites by type of risk. On the other hand, it provides an early assessment of the type of risk at the sites identified; the parties to the transaction must perform an assessment. Thus, it may enable the state to focus its efforts effectively on those types of sites of greatest concern. The targeted active approach may or may not identify a significant number of sites, but it best serves the goal of matching discovery to the risks of greatest concern.

Resource Needs

With respect to resources, the passive approach is clearly the least expensive. The passive/property transfer approach passes on significant discovery costs to site owners; however, it also requires an investment by the state to assure that disclosures are accurate and that cleanups are performed as represented. The active approach is the most costly; while the targeted active approach is somewhat less so, depending upon the resource or area targeted.

These alternative approaches have implications for cleanup costs as well. The passive approach avoids some cleanup costs by simply avoiding the discovery of sites. However, it may cost money in the long run if there are a significant number of undiscovered sites. Cleanup costs may rise over time, thus overcoming costs avoided by a slower discovery approach. The active approach and targeted active approach may cost more both initially and over the long term because of the number of sites discovered. However, finding sites more quickly may reduce the average cost of cleanups and/or limit population exposure (thus producing additional cost savings or public benefits).

The passive/property transfer approach is likely to identify sites with viable RPs. Thus, cleanup costs to the state should not be significantly increased (apart from oversight costs).

One significant cost issue with respect to all types of discovery approaches is that of opportunity cost. Is a dollar spent on discovery one that might have been better spent on mitigation of known risks? This issue is most critical for those programs with particularly limited funds. It appears that state programs with relatively limited funds may benefit from expenditure on site discovery. Among other things, a site discovery focus may drive the legislature to appropriate more funds if the "inventory" of known hazardous sites is closer to several hundred than it is to twenty. Passive/property transfer discovery programs can also leverage existing resources by commanding the commitment of private funds to site discovery and assessments. Thus, even a small state cleanup program with limited funds may not be best served by an entirely passive site discovery effort.

Life-Cycle Issues

Perhaps one of the least recognized factors relevant to site discovery approaches is timing. Different approaches appear to be appropriate at different stages of a program's life

cycle. Active site discovery is most desirable at the inception of a new state superfund program. It enables the state to identify areas of risk, and to prioritize its response on an informed basis. Even a poorly-funded new state program benefits from a focus on active site discovery (even at the possible expense of some cleanup of known sites). Such a discovery approach can build the legislative case for an expanded, better-funded program. New programs are also better able to afford an active discovery approach because during the first few years known sites are not ready for the high expenditures required for cleanup and remedial construction activities; thus, some funds should be available for discovery purposes.

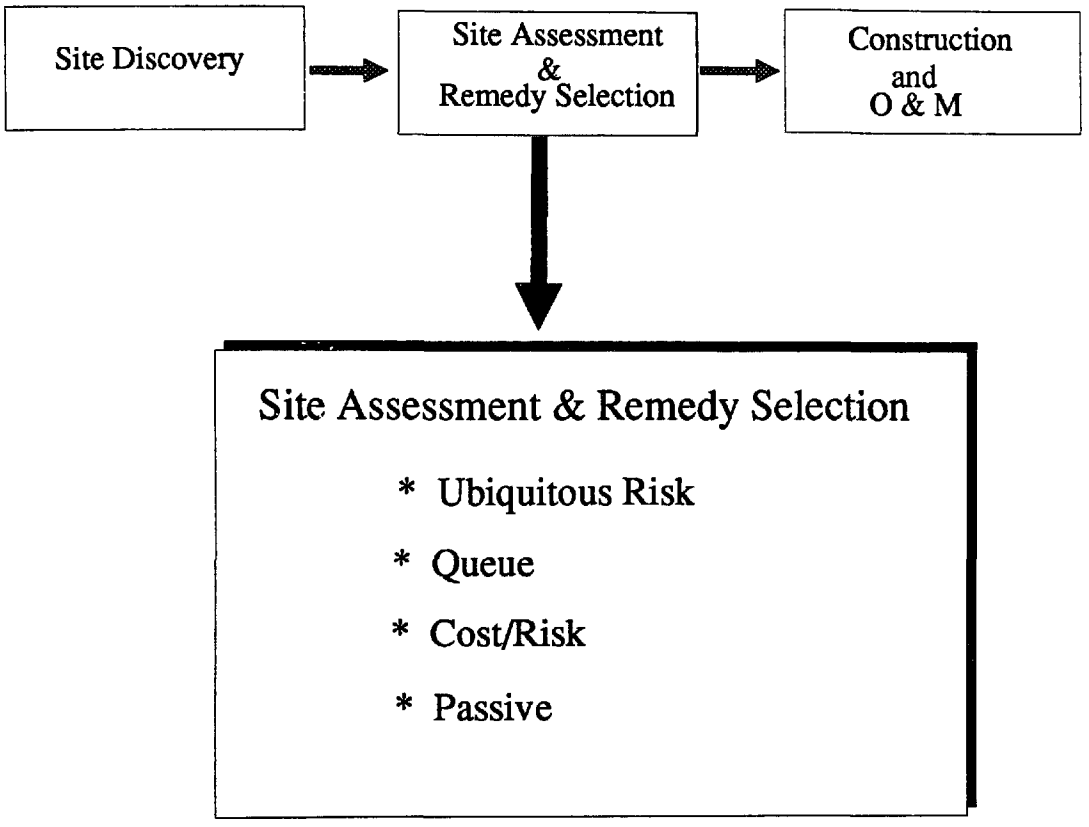
Over the longer term, a passive approach may be more appropriate. Once the state has identified most of its sites and has set priorities, the focus (and resources) may shift to remediation. Thus, in setting up a new program, a state may wish to establish an active discovery program and, sunsetting it after approximately two years, revert to a less costly approach.

The passive/property transfer approach may be useful at any time. Because it requires a commitment of staff resources to assure that the property transfer approach works, however, it may be appropriate for a program that has had some experience. The targeted active approach may also be useful at any phase of a program's development. It may be the most appropriate for a startup program, but it also can benefit an established program by focusing limited site discovery resources--perhaps limited by a primary focus on remediation activities--to where they are most needed.

III. SITE ASSESSMENT AND REMEDY SELECTION

As with site discovery, there are alternative approaches to site assessment and remedy selection. In general these fall into four categories. See Figure 6-3.

FIGURE 6-3
ALTERNATIVE APPROACHES TO SITE ASSESSMENT
AND REMEDY SELECTION



While these categories can be distinguished, many state programs involve elements of more than one. In general, however, a state program will select among these four and adopt one as its primary approach. The four alternative approaches are:

- Ubiquitous risk
- Queue
- Cost/Risk
- Passive

Under the **ubiquitous risk** approach, the state's goal is to mitigate some risks at all identified sites. This approach emphasizes the importance of removing some risk, recognizing that it may be years, if ever, before the program can accomplish full remediation at every site. It has political attractiveness, in that it serves all portions of the state in some way. On the other hand, it may not address the worst risks or largest problems in a comprehensive way, and it may defer permanent cleanup action at some sites.

The **queue** approach simply conducts cleanups as the sites become ready. It is guided by numerical or other cleanup standards for all sites, and whenever a site is addressed it is cleaned up in accordance with these standards. The queue does not prioritize sites on the basis of risk, but addresses them in terms of where they fall chronologically in terms of the discovery, assessment, and other work already done. A critical issue for a queue program is how sites are first placed in the queue.

The **cost/risk** approach uses program resources to alleviate the greatest risk at the least cost. Thus, it may focus on a few high-risk sites, or a mixed program of removals and remediation based on the risk reduction that can be obtained with available program resources. It may not pursue permanent remedies if greater risk reduction at sites considered in the aggregate statewide can be achieved in other ways.

The **passive** approach is characteristic of programs with severely constrained resources. It relies entirely on voluntary actions, sometimes through inducements like liability limitations. It is not a risk-based approach, and remedies may be variable.

All of these approaches have advantages and disadvantages, and all have differing implications in terms of risk goals, state funding, and enforcement.[83] It should be borne in mind that the ubiquitous risk, queue, and cost/risk approaches include a mix of

---

83. Various versions of these approaches were encountered in the 9-state study. Pennsylvania's relatively new state superfund program, for example, resembles a ubiquitous risk approach--relying significantly on removals (interim responses) at many sites during the startup period. A modified version of the ubiquitous risk approach has also been incorporated in EPA strategy in the 90-Day Superfund Management Review. This strategy calls for making sites safer by dealing with acute risk through the removal program followed by making sites cleaner by addressing those problems of higher priority through the remedial program. The queue is used in Illinois and New Jersey. The cost/risk approach is not employed in pure form in any state, although the Texas Priority list resembles an attempt at this system. The passive approach is exemplified by North Carolina's program which must rely on voluntary efforts and inducements.

enforcement-lead and fund-lead sites. In contrast, the passive approach is dependent upon voluntary efforts with some enforcement-lead.

The differences between these approaches with respect to goals, costs, and their relationship to alternative site discovery approaches are discussed in turn:

Ubiquitous Risk

The ubiquitous risk approach may be advantageous to a program that has short, medium, and long term goals. In the short run, the program may try to remove sources of contamination, later it may return to do additional remediation, and ultimately it may clean up sites to specified levels. The exact strategy may depend upon program resources, and the period of time over which the program may operate. The approach provides a way to address "equity" issues because all sites and hence all geographical areas (presumably) receive some mitigation of risks. The approach may not be conducive to permanent cleanups as it may take the "easy" risk reductions while deferring the long-term remedy until such time as resources or political interest are diminished. A ubiquitous risk approach clearly is not a "priority"-based approach either. A state may be precluded from pursuing a ubiquitous risk approach by statutory requirements (e.g. regarding permanent cleanups, or following through actions commenced with RPs), or by lack of resources. The ubiquitous risk approach may be used with any of the four site discovery approaches.

Queue

The queue approach basically takes sites in turn and remedies them to specified standards. The important planning issue is how sites are placed in the queue. There are essentially three options: (1) following site discovery, sites move on a first-come, first-serve basis through a standard process of PA/SI, RI/FS, and RD/RA as resources become available; (2) sites are screened for a specified risk threshold and then treated first-come, first-serve with other sites of the same risk class; or (3) sites are queued according to whether they are likely to be RP-lead. The queue approach works well for achieving certain risk reduction at the sites addressed. It is also compatible with virtually any number of sites; the key issue then becomes how long it will take to complete the queue. The queue does not prioritize on the basis of risk, nor does it attempt to optimize risk reduction statewide (as does the cost/risk approach and the ubiquitous approach). The queue's chief

advantages are its regularity of process, the achievement of quality assurance on those cleanups it completes, and its equity effects. The queue may also have strategic advantages for funding by drawing clear attention to future funding needs; legislators may be able to hasten cleanups in their districts only by increasing general program funding. The queue works well with all four discovery approaches, but best serves the goal of risk reduction if it is paired with a targeted active, or passive discovery program.

Costs and opportunity costs of a queue approach depend largely on the resources available. The queue works best with a well-funded program. Otherwise, program-wide activity may be stymied by a few particularly difficult sites or enforcement cases in the queue.

Cost/Risk

The cost/risk approach offers the advantage of "the biggest bang for the buck" in terms of risk reduction on a state-wide basis. The cost/risk decision can be made in two ways: screen out sites with risks of less concern and then attempt to remedy the most "risky" sites in full; or assess the amount of risk that can be removed at each site at a given cost. The first approach is somewhat like that of a highly limited priority list, but allocates funds, enforcement resources, and personnel to a relatively small number of sites. The Texas state program employs an approach similar to this. The second approach looks at all classes of risk and at the ease of reducing risk across a large universe of sites. It may result in inexpensive risk reductions being made at a number of sites, in addition to remediation of some costlier highly risky sites.

The cost/risk approach is reasonably effective at meeting the goal of risk reduction. However, it is less effective in meeting the goals of addressing a number of sites or maintaining the pace of remediation. This approach may work particularly well for state programs with unstable funding mechanisms. It assures that the greatest risk is reduced with available funds. Cost/risk does not perform well in terms of equity, since its application may result in most of a state's effort being focused on a few sites to the exclusion of all others. It may also lead to the exclusion of rural areas from a cleanup program.

The cost/risk approach does not necessarily require cleanup to a particular permanent standard, if this is not a cost-effective use of funds to achieve aggregate risk reduction. In this respect it is unlike the queue.

The cost/risk approach may be used with any of the site discovery approaches, but works least well with passive site discovery. There may be particularly risky but undiscovered sites under this discovery approach; any of the other three approaches provides a better prelude to a cost/risk assessment and remediation program.

Passive

The passive approach is entirely dependent upon "voluntary" RP cleanup. It does poorly with respect to types of risks addressed, as it is non-selective; it addresses only those sites where a volunteer comes forward. The degree of risk reduction at each site is dependent upon the level of oversight exercised (and on any limitations associated with inducements to RP "volunteers" under the system). The number of sites and pace depend upon a great number of independent factors. Obviously, an active site discovery program or a passive/property transfer program are likely to increase the number of sites and pace, as the mere identification of a site as a "state superfund" site can produce a significant inducement to voluntary cleanup by RPs. Conversely, a passive discovery program coupled with the passive approach to assessment and remediation will produce a limited number of sites and slow pace.

The costs of operating a passive program are low; and, indeed, inadequacy of funds is a typical reason for such a program approach. Long-term costs may be high, however. Non-remediated sites may worsen over time, or voluntary cleanups that meet only minimal standards may need to be redone in the future--possibly at state expense (particularly if the state has given the RPs a release from liability).

In order to address a significant number of sites a passive program must create leverage or inducements to private cleanup. Absent a credible threat of publicly funded cleanup, the next best approach is a combination of publicity and aggressive litigation of one or two cases to establish the threat of enforcement. Inducements based on reduction of oversight, limitations of liability, releases, or relaxed cleanup standards will produce an increase in the number of sites addressed and the pace of cleanup, but at the expense of the risk reduction goal.

Summary of Phase II Approaches

All four approaches are in use by some state programs. Each has advantages---ubiquitous risk in terms of equity and number of sites achieving some risk reduction; queue in terms of completeness of cleanup; cost/risk in terms of efficiency of risk reduction; and passive in terms of economy. The disadvantages of each have also been highlighted.

State legislators and program managers must keep in mind the identification of their program goals in terms of type of risk addressed, risk reduction at each site, number of sites, and pace. Then the selection of a site discovery approach can be coupled with a site assessment and remediation approach, and both of these matched to available (or anticipated) resources.

Figure 6-4 summarizes the choices in the context of the three-phase cleanup process.

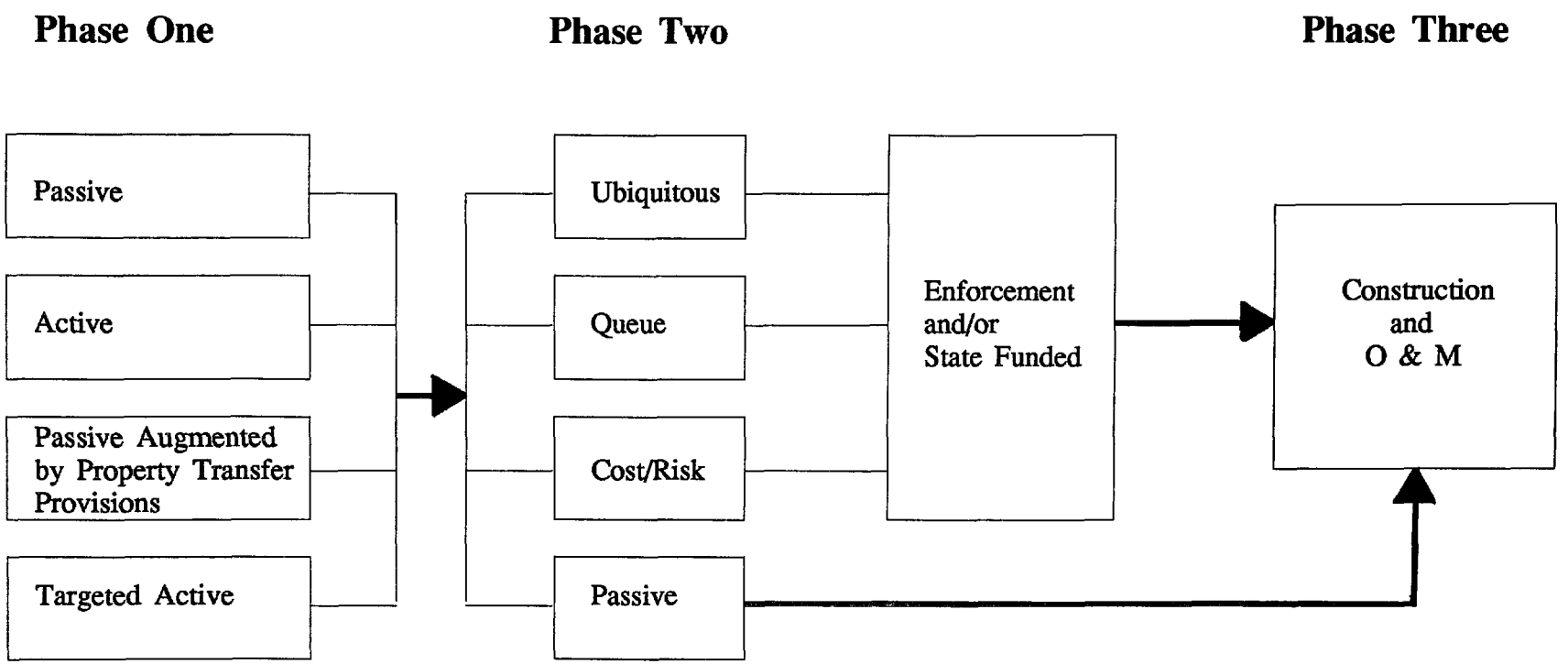
IV. ENFORCEMENT

As discussed in Chapter III, there are a number of effective methods of enforcement. All of those enforcement tools are useable with the Ubiquitous, Queue, and Cost/Risk approaches to site asessment and remedy selection. A program with a truly passive site assessment and remedy selection process would not, of course, use any enforcement tools. Few programs are, however, completely passive and use of some enforcement tools, even if only publicizing the existence of a site, will increase the number of RPs volunteering to conduct cleanups.

The type of enforcement tool used will not affect the type of risk addressed or the amount of risk reduction at a site, but it can affect the number of sites addressed and the pace. For example, tools that depend on litigation require significant time and resources, and are thus likely, at least in the short run, to reduce the number of sites addressed and slow the pace. If the program is successful in litigating the cases, the deterrent effect would be expected to result in more sites being remedied by RPs. This is particularly likely if the state is successful in claims for punitive damages and/or civil penalties in significant amounts. Thus, decisionmakers must assess their program goals for number of sites and pace over the short term and long term when they decide which enforcement tools to use. The discussion in Chapter 3 of the advantages and disadvantages of the major enforcement tools includes assessments of their effects on these two goals.

FIGURE 6-4

SUMMARY OF ALTERNATIVE APPROACHES



V. EPA AND STATE ASSESSMENTS OF PROGRAM APPROACHES

EPA must recognize the complexity of the state cleanup choices in assessing and targeting its support for state programs. States may select goals or combinations of goals differing from those of EPA, and may also construct different processes to achieve those goals, as noted above. Few, if any, state programs will be clones of the federal model.

Accordingly, EPA must consider how to support programs dealing with non-NPL sites in terms of site discovery and assessment and remediation approaches that are unlike CERCLA. One way of dealing with this is to inquire of the program what its goals are, and then assess how the state's selected approaches, legal authorities, and resource mix can achieve those goals. EPA grant support, technical assistance, or other involvement can then be intelligently targeted to those areas that most support the program.

For their part, state program managers must determine what their program goals are, particularly with reference to type of risk, level of mitigation, number of sites, and pace of cleanup. Then they may select that combination of approaches to site discovery and assessment and remediation that will best accomplish these goals.

This study has shown that there are many different ways to achieve the goals of a state cleanup program, but that the goals themselves and the alternative approaches to site discovery, assessment and remediation are actually limited in number. The most significant lesson of the study is that a state program should always be looked at comprehensively--not just in terms of how many dollars are available. Many different programs can be constructed on the same resource foundation through different combinations of approaches. Some state programs can even call forth additional resources over time if they are constructed to do so. This study suggests ways of enhancing state cleanup program capabilities given any resource base.

PART 2
STATE REPORTS

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INTRODUCTION TO PART 2

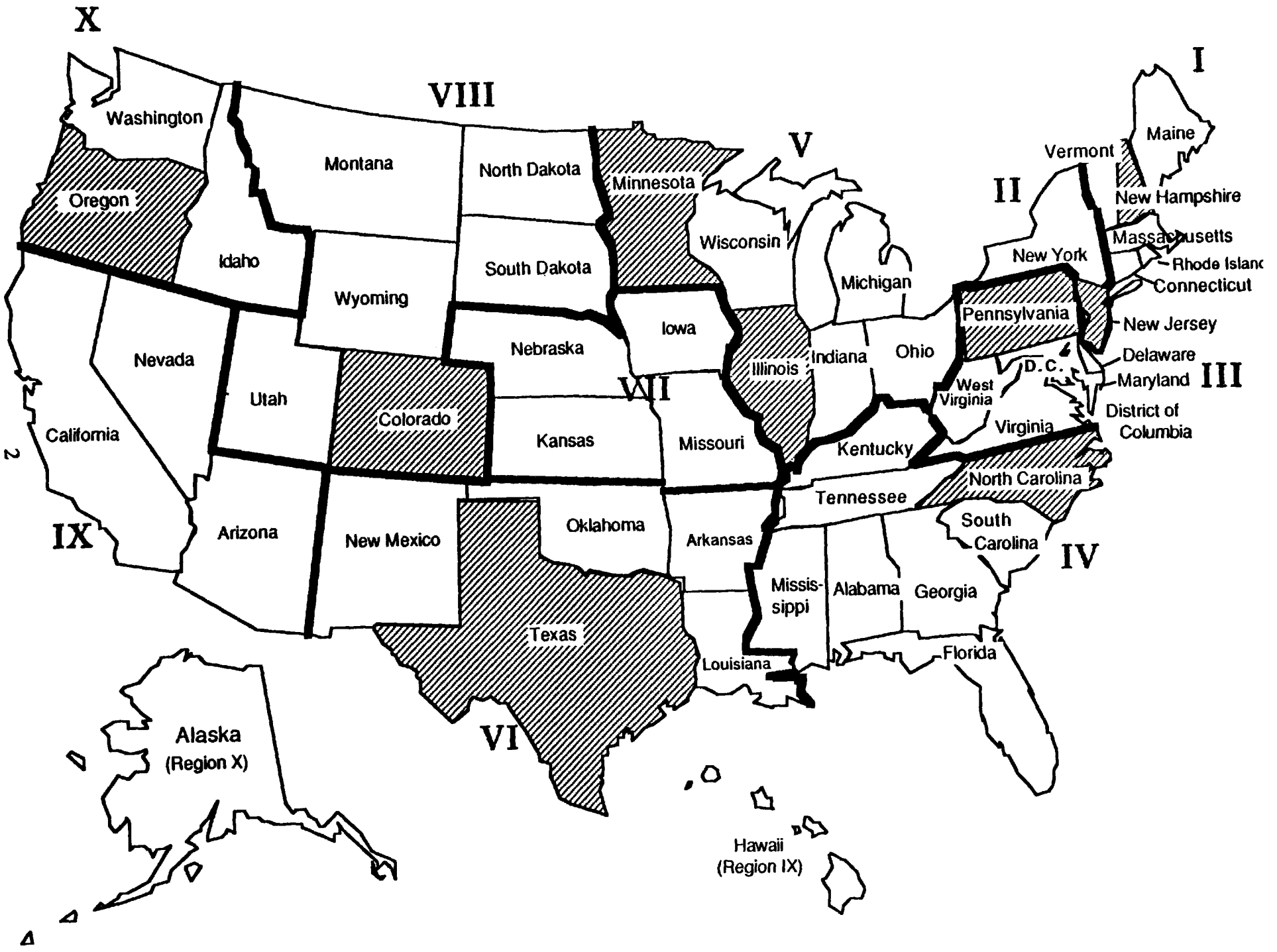
Part 2 of the report is divided into two sections. The Introduction discusses the methodology used to select the States for analysis and describes the interview process and the format of the State reports. The second section contains the individual State superfund program analyses.

I. SELECTION OF STATES

Our objective was to select states for this study that would provide regional diversity and a representative range of problems and sites typically addressed by state programs. We were interested in achieving a mix of states ranging from the largest programs with the most NPL and non-NPL sites to those programs addressing relatively few sites. We wanted to examine a cross-section of the country that included mature, established programs and some relatively new and emerging programs. Finally, we wanted to include some states with interesting innovations or unique program or enforcement elements.

The first step in the selection process was to screen state programs. This preliminary screening effort proceeded in two stages. OPPE had recently collected information for five of the larger state programs--California, Michigan, Minnesota, New Jersey, and New York--and requested that the ELI project examine at least two of these. Information for the remaining 45 States, compiled by ELI for another report (An Analysis of State Superfund Programs: 50-State Study), was assessed using the selection criteria described above.

The project team identified nine states that provided a representative mix of superfund programs. The nine states are dispersed geographically and represent eight EPA regions (Figure 1). One program, New Jersey, was established prior to the Federal Superfund Program while three programs (North Carolina, Oregon, and Pennsylvania) have been in operation for only one or two years. Table 1 presents selected characteristics of the nine state programs and illustrates the representativeness of the states in terms of program staffing, funding, and the number of hazardous waste sites. A short description of the factors that influenced the selection of each state is provided below.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South Dakota
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Iowa
Illinois
Indiana
Ohio
Nevada
Utah
Colorado
Kansas
Missouri
Kentucky
California
Arizona
New Mexico
Oklahoma
Arkansas
Tennessee
North Carolina
South Carolina
Mississippi
Alabama
Georgia
Texas
Louisiana
Florida
Alaska
(Region X)
Hawaii
(Region IX)

TABLE 1

SUMMARY OF STATE SUPERFUND PROGRAMS

	Year Program Established	Number of Program Staff [1]	Fund(s) Balance	Annual Additions to Fund(s)	Identified Hazardous Waste Sites[2]	NPL Sites as of October 1989[3]	
						Final	Proposed
Colorado	1985[4]	28[5]	$5M	$1.35M	361	15[6]	1[6]
Illinois	1984	46	$6.75M[7]	$4M[7,8]	224	26	12
Minnesota	1983[9]	80	$13M	$2-2.5M[10]	117	40	2
New Hampshire	1981	19	$1.9M	approx. $800K	400	15	1
New Jersey	1977	800[11]	$145.5M[7] $300M bonds	$27.9M $225M over 5 years	3225	103	6
North Carolina	1987	20[12]	$616K[7]	$600K FY 87-89 $0 FY 89-90	799	20	2
Oregon	1987	39[13]	$4.5M	$2.3-2.6M	750[14]	6	2
Pennsylvania	1988	142[5]	$32M	$52.75M	1100	87	10
Texas	1985[15]	30	$12.6M[7]	$9M[10]	88	25	4

1. Including staff working on NPL sites.
2. Source: GAO, Survey of States' Cleanups of Non-NPL Hazardous Waste Sites, 1989.
3. Source: U.S. EPA information, Office of Emergency and Remedial Response, October 1989.
4. Seven natural resources damages suits were filed under CERCLA in 1983.
5. Including legal staff.
6. ELI information, 12/11/89.
7. Sum of two funds.
8. Plus a variable bond authorization.
9. Began developing an inventory of sites in 1981.
10. Plus variable funds from penalties, interest, and appropriations.
11. Includes some employees spending only part of their time on Superfund.
12. Most work on Federal CERCLA matters; 4 work on State superfund issues.
13. 30 permanent, 9 temporary. Includes staff in the Leaking Underground Storage Tank Section.
14. ELI information, 8/3/89.
15. Matching funds for Federal superfund sites were authorized in 1981.

Colorado The State has considerable experience with natural resource damage claims. The non-NPL cleanup program is extremely limited and funding is primarily available for the State's cost share at NPL sites.

Illinois The State has an innovative community relations program and an active voluntary cleanup program. For such a large state, it has relatively few NPL or State priority list sites in comparison to the large number of Illinois sites in CERCLIS.

Minnesota The State utilizes the "team" approach for managing site cleanups. The program has a major effort focused on hazardous waste cleanups at municipal landfills. The State has history of successful negotiations with RPs to conduct cleanups at non-NPL sites.

New Hampshire The State provides an example of a small but active program, emphasizing RP cleanups. The program has limited funds and is now grappling with long term funding issues.

New Jersey The State has the largest and oldest State superfund program in the United States, the first property transfer law and program, and strong enforcement authorities coupled with a large fund.

North Carolina The State has an extremely limited fund and relies heavily on RPs to conduct cleanups at non-NPL sites. By statute, RP liability on non-NPL sites is capped at $3 million.

Oregon The State has an innovative voluntary PA program and a unique approach for managing site cleanups. The program has a new bond fund for financing State-lead cleanups.

Pennsylvania The State has a new program, bolstered by a large annual fund and authorization to put together one of the largest staffs for a State program.

Texas The State is the largest generator of hazardous waste in the United States, but has a small program in comparison to States of comparable population.

II. STATE ANALYSIS AND REPORTS

For each state, ELI already had compiled background information for the 50-State Study. We contacted states and requested updated or additional information on sites, regulations, policies, and guidances. States provided fact sheets, copies of statutes, documents such as annual reports, and analyses and program reviews.

We made arrangements with each state to visit their program offices and conduct interviews with the program managers and legal staff. Interviews focused on corroborating and updating information on the state program, and on clarifying and refining our understanding of program goals, organization, staffing, and funding as well as individual elements of the cleanup process. The interviews required approximately two days to complete and were conducted by a senior ELI staff person and an additional staff person. The interviews were completed over a three-month period from early June through August.

The state reports are organized in a common framework with an introduction, discussion of statutes, program organization, funding, and the cleanup process, a separate section (if appropriate) on unique programs, and a concluding section. An overview of each program was also prepared.

Preparation of the state reports required some follow-up conversations with staff to clarify interview notes. The draft reports were reviewed and revised to reflect comments by the EPA project officer and staff in the State and Local Coordination Branch in EPA's Office of Solid Waste and Emergency Response. The revised drafts were then sent to state contacts and EPA regional contacts in Regions VI and VIII for additional review. The final version of each state report reflects comments made by the states.

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COLORADO

OVERVIEW

Colorado has no State superfund program for non-NPL sites. Its Hazardous Substances Response Fund, with a balance of approximately $5 million, is authorized to be used primarily for providing matching funds for remediation at NPL sites, although 5% of the Fund may be used for administrative expenses. Even for these obligations the Fund is likely to experience a shortfall of $4 to $5.5 million by 1995. Staffing and administration are entirely funded by Federal grants and by the 5% of the Fund. No appropriated revenues are available. The Fund's income comes primarily from solid waste fees, which are scheduled to end in 1995. Colorado has approximately 400 CERCLIS sites and had 16 NPL sites as of December, 1989.

Enforcement Colorado laws provide no clear enforcement authority against RPs who are not the owners or operators of sites. Colorado relies on RCRA-type authorities, other environmental laws, imminent danger orders, and nuisance law. For seven major sites, however, Colorado has used the Federal response cost and natural resource damages lawsuit authority provided in CERCLA to take enforcement action.

Natural Resource Damages Colorado is unique in its approach to litigating natural resource damages (NRD) cases. The State asserts trusteeship of the "public" component of every natural resource in the State, whether publicly or privately owned, and asserts claims for past, interim, and future damages to natural resources. In addition, the State seeks past and future response costs. The State has spent approximately $13 million litigating the seven cases, three of which have settled. The State has recovered $14.5 million thus far, plus agreements in three of the cases to conduct remediation valued at $100 million. The funds collected have been allocated to past and future response costs, as well as natural resource damages. Natural resource damage recoveries have been $3.7 million to date. The State will not accept less than 100% of response costs, and all settlements have been on this basis. As more cases are settled, it is anticipated that the State will achieve a greater return.

Emergency Response Emergency response to releases of hazardous substances is primarily a local responsibility in Colorado. The State has a very limited emergency response program, relying principally on EPA. State emergency response is provided by the Highway Patrol, with technical assistance provided by the Department of Health.

I. INTRODUCTION--SITES AND PROGRAM HISTORY

Colorado has 16 sites on the National Priorities List--15 final and 1 proposed. In addition, it has other sites with serious contamination problems that, because of Colorado's scattered population, have not ranked high enough to be placed on the NPL. Colorado has approximately 400 sites on CERCLIS, most of which have had preliminary assessments; Colorado states that approximately 85% of these will require no further action. Colorado does not have an active site discovery program, so there may be additional sites unknown to the state. Most of the sites in Colorado that will require action are either mining or mill sites, Federal defense facilities, or industrial landfills. A significant number of the sites are

hazardous due to radioactive waste as well as chemical hazards. Most of the sites are large in area. Most also have a limited number of responsible parties (although the mine sites may have a significant number of small mining claim holders in addition to major mining companies). While cleanup of sites--particularly the defense facilities and landfills--is generally supported by the public, support for the cleanup of some mining sites is less strong.

The Colorado State superfund program essentially began in 1985, although some activities occurred earlier. Specifically, in 1983 Colorado's governor, by executive order, authorized the Attorney General to file suits under CERCLA on behalf of the state to recover natural resource damages; seven suits were filed against responsible parties (including the United States government) just before the then applicable statute of limitations ran out.[1] The Colorado legislature appropriated no money to support the litigation of these suits until 1985.

In 1985, the legislature also enacted legislation establishing the Hazardous Substances Response Fund. The Fund was established to provide a source of monies for the State match requirements for Federal Fund-lead NPL sites. Responsibility for overseeing State interests in NPL sites was assumed by several divisions of the Colorado Department of Health (CDH), in consultation with the Department of Natural Resources. In 1987, these responsibilities were unified in the Remedial Programs Section of the CDH's Hazardous Materials and Waste Management Division. Apart from the seven natural resources damages (NRD) cases, which are managed by the Attorney General, and the 16 NPL sites, which are managed by the CDH, Colorado has no "State superfund program" dealing with other sites.

II. STATUTE

Colorado's Hazardous Substances Response Fund is authorized under Colorado Rev. Stat. 25-16-101 et seq. The Fund may be expended primarily for state matching funds on

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1. 42 U.S.C. 9612(d) as enacted in 1980 prescribed a three year statute of limitations running from December 11, 1980. In 1986, the statute was amended. Section 9613(g) now prescribes a three-year statute of limitations for natural resource damages cases running from the later of (a) the discovery of the loss, or (b) the date on which natural resources damages regulations were promulgated.

Federal NPL sites; however, up to 5% of the balance may be used in any year for CDH administrative expenses. Colorado has no "superfund" enforcement authorities in its laws. Under State law, it has:

- administrative order authority under its RCRA-type hazardous waste law,
- administrative order authority for emergencies involving imminent and substantial threats to public health and safety or the environment,
- administrative order and injunctive authority to abate discharges of "pollutants" which constitute a "clear, present, and immediate" danger to the public.
- administrative order and injunctive authority under its water quality law to require cleanup of "any material" that was "accidentally or purposely dumped, spilled, or otherwise deposited in or near state waters which may pollute them," and
- injunctive authority for abatement of a "public nuisance."[2]

These orders and remedies do not readily apply to cases where the state may need to obtain relief from a potentially responsible party other than the current owner or operator of a site (e.g. generators and transporters), and Colorado has not used these State law authorities to reach such non-owner/operator PRPs.

In the absence of a State superfund enforcement statute, Colorado has used the Federal authorities provided in CERCLA for enforcement at seven sites. Its use of the CERCLA natural resource damages provision, and its development of an expanded range of remedies--including injunctive authority--against RPs under that provision, is unique among the States.

III. ORGANIZATION

The Hazardous Materials and Waste Management Division of the CDH has primary responsibility for hazardous sites. The Division has three sections:

- Hazardous Waste Control Section--which deals with implementation of the state's RCRA program;

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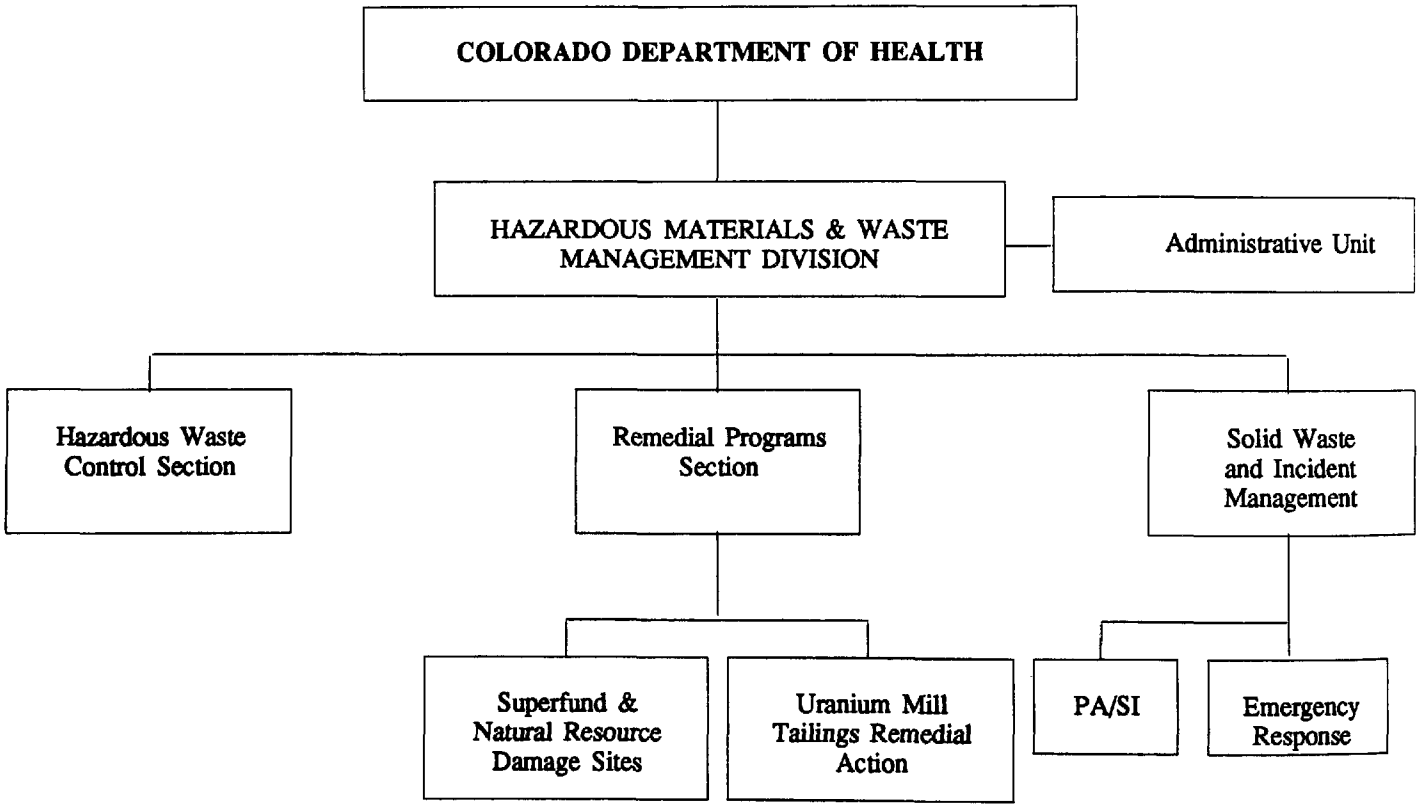
2. Colorado Rev. Stat. 25-15-308(2); 25-15-301(4); 25-15-210; 25-8-307; 25-8-606; 16-13-308; 16-309.

- Remedial Programs Section--which deals with NPL sites and NRD sites (5 of the 7 NRD sites are also on the NPL) and with uranium mill tailing sites; and

- Solid Waste and Incident Management Section--which deals with solid waste, underground storage tanks, PA/SIs, and emergency response coordination. See Figure CO-1.

The entire division has fewer than 75 employees, most of whom are not involved with superfund issues. The bulk of the superfund work occurs in the Remedial Programs Section.

FIGURE CO-1



The Remedial Programs Section has a section chief, a superfund program supervisor, and nine (9) remedial project managers (RPMs) responsible for work on NPL and NRD sites. The RPM for the Rocky Mountain Arsenal site is assisted by two additional technical

staff. The nine RPMs oversee 16 sites.[3] Two additional RPMs in the Radiation Control Division are responsible for two NPL-NRD sites (Uravan and Cotter) that were being handled by that Division at the time the Remedial Programs Section was organized. These RPMs are funded through settlements with RPs that provided for future response costs. The Colorado superfund staff has experienced little turnover.

The Hazardous Waste Control Section has 24 staff to implement Colorado's RCRA program. Three to four staff spend the bulk of their time on the Rocky Flats nuclear weapons facility. This section also oversees the Martin Marietta site, which was previously proposed for the NPL. Each of these cases is regarded by Colorado as primarily a RCRA matter. Any non-NPL, non-NRD hazardous waste sites also are regulated by this section.

In the Solid Waste Section, there is 1/2 FTE working on PA/SIs, with another 1/2 being added in 1989. The staffing of the PA/SI program does not enable Colorado to evaluate a significant number of sites each year.

In the Colorado program, the Attorney General's office does more than simply provide legal support. The AG is the lead agency for the seven NRD cases. For technical expertise, in addition to CDH staff, it may hire outside experts. The Attorney General's CERCLA Litigation Section was organized in 1985 to handle the NRD cases. Its size has fluctuated, but it currently has ten (10) lawyers and an undisclosed number of support staff and contractor staff. The lawyers are all experienced litigators, many of whom were hired from private practice.

The Attorney General also has a Natural Resources Section, which handles enforcement litigation and other legal matters for the CDH and the Colorado Department of Natural Resources. The regulatory agencies' budgets fund the attorneys. Currently four attorneys work on RCRA, solid waste, and Federal superfund site matters--one FTE on superfund.

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3. The Uranium Mill Tailings (UMTRAP) program within the Section has 13 staff working on 7 tailings sites and associated properties.

IV. FUNDING

Staff Funding

In general, the Colorado legislature has not supported the expenditure of general revenues to carry out regulatory programs. As a result, most administrative funding must come from a combination of fees (all of which have "sunset" provisions) and Federal grant monies.

The superfund program of the Remedial Program Section is entirely dependent upon EPA grants: one CORE grant, one multisite cooperative agreement, two site-specific cooperative agreements, and one PA/SI cooperative agreement. The only non-EPA funds come from a portion of the 5% of the Hazardous Substances Response Fund that may be expended for administrative purposes, and some monies received through the AG's CERCLA Litigation Section for support of litigation or oversight at NRD sites.

The Hazardous Waste Control Section receives the majority of its funds under EPA's RCRA grants, but also receives some funding from permit and operating fees on hazardous waste facilities.

The lack of generally appropriated funds to support a State superfund program is problematic for the program's future, particularly given the absence of fee support for staff and operations.

Natural Resource Damages Case Funding

Despite its normal reluctance to appropriate general funds for regulatory purposes, in 1985 the legislature appropriated $5.3 million to fund the Attorney General's prosecution of the seven NRD suits that had been filed in December 1983. The legislature specified that it expected full recovery of all of these costs, plus the natural resource damages. Successive appropriations have been made for the litigation.

TABLE CO-1

Expenditures to Date
(7 sites)

FY 1985 & 1986	$6.26 million
1987	3.67 million
1988	1.18 million
1989	1.68 million

	$12.76 million

Recoveries to Date
(settlements on 3 sites; partial settlements on 3 sites)

$14.51 million

The NRD cases have been a financial and remedial success thus far. Since 1985, three cases have settled for cost recoveries and natural resource damages. In addition to the payment of response costs and natural resource damages, the RPs have agreed to perform the required remedial action. Cost recovery has been agreed to in a fourth case, but natural resource damages are still pending. Partial reimbursements of response costs have been received on two other sites. The litigation has recovered $3.7 million in natural resource damages. The total recoveries by the CERCLA Litigation Section compensate the State for pre-litigation and post-litigation expenses. Because recoveries through FY 1989 have exceeded the total amount expended for litigation on all seven sites, the cases have produced a positive rate of return for the State. The remaining sites--which account for a significant portion of the costs--will generate additional recoveries in the future. Colorado has refused to accept settlements of less than 100% of response costs (including litigation costs), and has received this in all settlements.

Recoveries that reimburse past response costs are returned to the general treasury. Recoveries that will pay for future response costs--i.e. for site oversight--are deposited in the Hazardous Substances Response Fund but earmarked for use on the specific site. Recoveries for natural resources damages are deposited in the CERCLA Recovery Fund.[4]

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4. Colo. Rev. Stat. 25-16-201.

CERCLA Recovery Fund monies are also returned to the general treasury, but under Colorado law may be appropriated for any lawful purpose, including the maintenance of the litigation. Some such appropriations have been made. Thus, the CERCLA Recovery Fund has served as merely a transfer vehicle to return funds to the general treasury. Although this Fund "sunsets" on January 1, 1990, this should have no effect, since in the absence of any other provision, recovered funds revert to the treasury. Following the decision of the U.S. Court of Appeals for the District of Columbia circuit in 1989 on natural resource damages regulations, however, Colorado has begun to consider having CERCLA Recovery Fund monies held by a trustee.

Hazardous Substances Response Fund

The Hazardous Substances Response Fund is the State's "superfund". It consists of fees collected on solid waste disposal, plus interest on the Fund balance. (By law, the Fund may also receive appropriations, cost recoveries that do not represent natural resource damages, and monies from other sources.) The State has used the Fund as the repository for "future" response costs received in settlements of NRD cases. These funds are earmarked for the particular sites to which they apply. The solid waste fees are collected by the operator of the disposal facility and are $0.05 per load of solid waste transported by automobile, $0.10 per load transported by non-commercial truck, and $0.15 per cubic yard transported by commercial vehicle.[5] 5% of the fee collected is credited to the operator to offset costs of collection. Fees are remitted to the Fund quarterly. The fees generate revenue of approximately $1.35 million per year. The fees were scheduled to "sunset" in 1990, but were legislatively extended until January 1, 1995. The Fund balance at June 30, 1989 stood at approximately $5 million.

The law authorizes expenditures of up to 5% of the Fund balance to support administration of the program. Otherwise, the Fund is used to provide required state matching funds on federal NPL sites. Only limited expenditures have been made from the Fund since it was established in 1985, and the CDH is seeking to defer expenditures as long as possible in order to maximize the interest income. In FY 1989, interest accounted for 26% of the income to the Fund.

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5. Colo. Rev. Stat. 25-16-104.5.

The CDH has attempted to project the ability of the Fund to meet potential CERCLA match obligations. Assuming continued receipt of $1.35 million for the next three years (with a 2% decline thereafter due to solid waste minimization efforts), and spreading out payment from the Fund to maximize receipt of interest (at 7% per annum), the CDH projects a shortfall in the Fund's ability to meet all obligations. Fund obligations have been made on three sites to date. Additional obligations may be required on these and other sites. Projections are enforcement-confidential. In addition, operation and maintenance costs may be significant (i.e. up to 25% of match costs on some sites). A middle-ground estimate of State match requirements (not assuming worst-case) is that the Fund may experience a shortfall of between $4 million and $5.5 million by the scheduled "sunset" of the fees.

Critical to the Fund's ability to limit the shortfall to even this amount is whether matching payments can be deferred as long as possible in order to maximize interest income--*viz.* to defer matching payouts until the mid 1990s. If payouts must occur earlier, the shortfall could be significantly greater.

There are several other measures that, if adopted by the legislature, could positively affect the Fund. These could include extension of the solid waste fee after January 1, 1995, the elimination of an existing credit enjoyed by several landfills (approximately $0.5 million per year), an increase in the fee, or the authorization of additional sources of revenue. Interestingly, the obvious administrative strategy of maximizing interest income by deferring payouts could operate against the likelihood of a legislative solution in two ways: (1) it may be difficult to obtain additional revenues when the Fund balance is high, and (2) if deferral of the payments has resulted in EPA picking up the costs up front, there may be little incentive for the legislature to act. On the other hand, if payouts are not deferred, the actual shortfall will be significantly greater. It will also be encountered earlier and may result in the search for revenues essentially becoming a referendum on the program. It is unclear whether the legislature will have any interest in finding new sources of revenue given ambivalence in the State about cleanups of mine sites--some of the NPL sites at issue.

For the same reasons that the Fund is likely to be inadequate to sustain State matching fund obligations, it cannot clean up non-NPL sites. Only a substantial new source of revenues could give Colorado a State "superfund" program.

V. REMEDIATION PROCESS

The Colorado program focuses almost entirely on NPL sites. There are 15 NPL sites and 1 proposed NPL site in Colorado. Five of the NPL sites--Rocky Mountain Arsenal, Yak Tunnel, Uravan, Lincoln Park (Cotter), and Eagle--are also NRD cases being handled by the CERCLA Litigation Section with support from the CDH. Two other NRD sites--Idarado and ASARCO/Globeville--are not on the NPL. Colorado is handling the Rocky Flats weapons facility (NPL) and the Martin Marietta site (deleted from the NPL) under its state RCRA-type authorities. The CDH is doing State-lead work on the Denver Radium and Clear Creek NPL sites.

Natural Resource Damages Cases

The NRD cases were approached by the Attorney General as litigation matters. The claims in the case were amended so that the State was seeking not only money damages for damage to wildlife, water, etc., but also repayment of all response costs, and prospective injunctive relief--that is, court-ordered remedial action. Each of these categories--natural resource damages, response costs, and remediation--was defined as broadly as possible by the state in order to maximize recovery and to maximize settlement pressures on the RPs.

The State has taken the position that natural resource damages are not simply limited to losses in value (or even replacement costs) for traditional resources such as wildlife and waters generally thought to be within the trusteeship of the state. Instead, Colorado asserted trusteeship of the "public" component of every natural resource within the state, whether publicly or privately owned. It asserted claims for the "public" value of air, water, groundwater, plants, trees, fish and wildlife, land surface, minerals, etc. It then asserted claims for past damages to these resources (i.e. the loss of these values for x years in the past, which cannot be mitigated); for interim damages (the loss during the period between the claim and full remediation); and future damages (the loss after remediation for the inability of remediation to restore the resource to its pristine, unaffected condition). In assessing these damages to all resources in all times, the State claimed not only market damages but also:

- use value (the loss of use),
- existence value (the value people place simply on the resource's existence--i.e. a trout stream or aesthetic area perhaps never used by a person but which that person would pay simply to preserve),
- bequest value (the value of passing on natural resources to one's children and grandchildren), and
- option value (the value of having the option to use a given resource).

The State commissioned sophisticated economic studies and survey instruments, and developed a substantial quantity of evidentiary material for use in litigating these damages.

The State took a similar approach to the litigation of response costs. The Attorney General defined response costs for purpose of the claims as not only the costs of litigating the NRD cases, and on-site activities related to site remediation and case preparation, but also many non-reimbursed regulatory actions related to the hazardous substance in the history of the site (dating back 10 or more years). In addition, future response costs were claimed for the costs of oversight of remediation.

Finally, by seeking injunctive relief, Colorado expanded the value of natural resource damage cases by including injunctive actions, relying on section 121(e)(2) of SARA. Colorado's position was upheld by a trial court, but reversed on appeal in 1990.[6]

Colorado has obtained settlements at the Uravan, Cotter, and Eagle sites for 100% of response costs, plus $3.7 million in natural resource damages, and remedial action. The consent decrees are detailed, consistent with the NCP, and contain stipulated penalties and dispute resolution provisions. The dispute resolution provisions provide for mediation; if mediation is unsuccessful, an arbitrator will determine the facts, and the final decision will be by the Federal district judge based on the facts found by the arbitrator. The defendant pays all costs associated with a dispute, unless the State's position is ultimately found to be "unreasonable." (Thus the State could lose a dispute on the merits, but still have all of its costs paid). The settlements all provide for a set-aside of future response costs paid by the defendants to cover oversight and other activities by the State.

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6. Colorado v. Idarado Mining Co., Civ. No. 83-D-2385 (D. Colo. Feb. 22, 1989), reversed (10th Cir. October 11, 1990).

Colorado is still litigating the other cases, although it has accepted an offer of judgment from the United States and Shell Oil Co. in the Rocky Mountain Arsenal case for $2 million to cover past response costs. The trial on the remedy phase of the Idarado case has been completed. The judge upheld, in most particulars, the $40 million remedy arrived at in the State ROD. (The State performed the RI/FS). At ASARCO/Globeville the RP has completed the RI, and is about to commence work on the FS. At the Yak Tunnel site, the State filed suit and a settlement decree covering the class of small mining claimholders for site access. The State did the RI/FS and was ready to issue an ROD; EPA also wished to issue its own ROD. The EPA's interest coupled with the reaction by the mining claim holders and others to the State suit for access resulted in the State turning the site over to EPA for administration. EPA reimbursed the State's investigation costs.

Other Cases

Colorado has handled a few cases that were not NRD suits. At the Martin Marietta site, Colorado used its RCRA authorities to enter into a consent decree with the operator in 1986. (EPA issued RCRA 3008(h) and CERCLA 106 orders to the operator for other parts of the site. Part of the site was proposed for the NPL but the proposal has been withdrawn). At Rocky Flats, Colorado and EPA entered into a joint agreement with the Department of Energy in 1986; there are over 100 operable units and over 100 corrective action areas on the site. The agreement provided schedules for permit applications and for RI/FSs. Activities are ongoing at the site, although it seems clear that RCRA violations are also ongoing. (Part of the site is proposed for the NPL). In February 1989, Colorado and EPA entered into consent orders with Conoco for the Total Petroleum site. Colorado used its emergency order authority and EPA its RCRA 3008(h) authority. All three of these sites involved ongoing RCRA facilities.

A Colorado enforcement case a little more akin to superfund actions was the Syntex facility. This was a disposal area for pharmaceutical wastes that was closed in 1976. Colorado demanded that the successor company of the owner clean up the site, which was leaking hazardous material from unlined trenches toward a public water supply. The CDH used its RCRA authorities (on the theory that the present leaking is unlawful disposal), common law and statutory nuisance authorities, and water quality laws. The responsible party entered into an interim and final consent order for site evaluation and implementation

of a remedial action; the order provided for stipulated penalties for violation of its provisions, cost recovery of $30,000 for oversight of the evaluation and design phase, and additional cost recovery to fund prospectively a full-time on-site coordinator for the remedial action and oversight by the CDH. This agreement is the nearest thing to a "State superfund" enforcement case that the CDH has maintained under State authorities. It was possible chiefly because Syntex still owned the property and had been responsible for the operations when the waste was disposed of. It is not clear that Colorado has any legal enforcement authority that could reach a party who was merely a generator at a site that is now inactive and in need of remedial action.

Colorado has not identified other sites where such "State superfund" authority is needed. The site identification process has not been a priority in Colorado, however. The most likely potential sites not on the NPL may include mine sites, which escape Colorado's RCRA authority under the Bevill amendment. Because there is no strong support for cleanup of mine sites in any event, and no other well-known sites that are clearly escaping necessary enforcement, there is probably little present incentive for the Colorado legislature to enact State superfund enforcement authorities.

Cleanup Standards

Colorado has developed site-specific lists of cleanup standards for those NRD sites where remedies have been developed. Because most of these are also NPL sites, the standards have had to be consistent with those of CERCLA.

Public Participation

The Hazardous Materials and Waste Management Division hired its first community relations specialist in February 1989. Prior to that time, Colorado did hold some meetings related to sites and remedies. On the NRD sites, the public was involved with the major components of remedial decisions. On the remaining NPL sites, Colorado let EPA conduct the community relations and public participation requirements. Now Colorado is attempting to involve the public on a more extensive basis at a few sites--e.g. Clear Creek. The idea is to have regular bi-monthly meetings to keep the public apprised of activities and decisions. This program is in its early stages of development.

Property Transfer

Colorado has no formal process for review or approval of property transfers (as in New Jersey, for example). Increasing awareness by the financial community of possible environmental liabilities, however, has led to frequent requests to the CDH for record checks on facilities being sold or financed. While the CDH has no formal process or budget to handle these requests, this responsibility has been assigned to the individual responsible for PA/SIs (and for solid waste matters). It involves a simple record check, but no other actions; the CDH anticipates an ever-increasing demand for this service, but has not planned for how this may be accommodated.

Emergency Response

Emergency response is a local responsibility in Colorado. By statute, primary responders are city or county agencies, including police and fire departments. The State program has been essentially unfunded. At one time the legislature created a $50,000 fund administered by the Colorado Department of Local Affairs to be used to refund local response costs, with cost recovery to replenish the fund. The entire balance was expended within three months; there was no cost recovery. The fund has not been replenished by the legislature.

There are three agencies at the State level with some responsibility for emergency response. The Highway Patrol is the primary responder on State highways and in areas outside major cities that have "hazmat" (hazardous materials incident) teams. In 1989 for the first time the legislature appropriated funds to train 20 officers for hazmat duties with the highway patrol. The CDH is primarily responsible for "technical assistance" to local responders and to the Highway Patrol. The CDH also must be informed of all incidents. It has no budget and no staff for these functions; the chief of the Solid Waste Section handles emergency response in addition to regular duties. Six CDH staffers take turns wearing a pager (for a week at a time) to receive notification of incidents. There is no budget even for samples. However, the State laboratory does some analysis as needed off budget. As of FY 1990, the legislature for the first time appropriated $17,000 to the CDH to be used for emergency response activities. The Department of Public Safety, Division of Disaster and Emergency Services (DODES) is responsible for coordination and planning for

major disasters; its staff may also serve on-scene roles at major natural or human-caused disasters.

Each year, the State gets approximately 1100 emergency response calls. About 60% of these are truck spills, and most cleanups are handled by the companies involved. State officials actually deal with only about 50 incidents per year. No Colorado agency at the State level has the ability to follow an emergency response with a full-scale environmental cleanup; and most immediate responses (except in the cities) must be improvised. Accordingly, Colorado relies heavily on EPA for on-scene coordination and emergency response. EPA does all time-critical removals of hazardous substances.

VI. PROGRAM OUTLOOK

The Colorado program will need to find additional funding in order to meet its projected CERCLA match requirements. In addition, it must stretch out its payments to EPA in order to maximize the receipt of interest income to the Fund. Additional funding will also be necessary if Colorado decides in the future to provide funding for cleanup of non-NPL sites. The latter is not currently under consideration by the State.

Colorado's NRD suits have been successful, and illustrate what can be done with CERCLA authorities and an aggressive litigating posture, even absent strong State enforcement tools. The remaining NRD cases will wind down over the next several years. It is uncertain whether Colorado will file NRD suits dealing with other sites.

Site discovery efforts are not a priority for the State at present. Investment of resources in site discovery may, however, reveal that Colorado has more sites to deal with than those currently known.

A State superfund enforcement law would facilitate cleanup of newly discovered sites and non-NPL sites. Current Colorado enforcement authorities do not clearly provide a means for the CDH to compel a non-owner/operator to conduct cleanup of a site where hazardous substances had been previously, and lawfully, disposed of. Colorado does not have a specific State superfund order or injunction authority. However, the State has made creative use of such authorities under other laws. The lack of a "superfund"-type authority may be of potential significance in the future if Colorado evaluates solid waste landfills and other previous disposal sites for possible cleanup.

ILLINOIS

OVERVIEW

Illinois has 1245 CERCLIS sites, 95% of which have undergone preliminary assessment, and 65% of which have undergone site investigation. Approximately 300 of the CERCLIS sites are expected to require no further action. The Illinois Environmental Protection Agency (IEPA) is primarily concerned about the State's 38 National Priorities List (NPL) sites and the 29 sites listed on the State Remedial Action Priorities List (SRAPL).

Enforcement While the Agency is confident of its resources and expertise--it has the lead role on 17 of the 39 NPL sites, three of which include RD/RA--it prefers to draw in responsible parties for site work. Lacking administrative order authority, IEPA relies on the strength of its notification procedure, which alone imperils RPs with penalties and treble damages in the event of their noncompliance. In addition, joint and several liability is the working principle in the State; though such liability is not specified by statute, it has not been challenged. Together, notification, the liability standard, and the existence of reliable funding have been the cornerstones of the IEPA enforcement strategy.

At present, the Agency is monitoring 127 voluntary actions, 79 of which are cleanups. The Voluntary Cleanup Program, which is part of the Remedial Project Management Section (RPMS) in IEPA, is the fastest growing portion of RPMS: Between August 1987 and August 1988, the number of such cleanups increased by 35% in Illinois. This growth may in part be ascribed to IEPA's willingness to enforce site action; to date, the State is involved in over 20 cost recovery cases, including six for treble damages.

Program Organization The 40-member RPMS staff receives legal support from the Division of Enforcement Services and the Illinois State Attorney General's Office. Team organization is a priority in the RPMS; each new site is assigned a project manager, an IEPA attorney, and a toxicologist to ensure the immediate coordination of management, legal, and technical personnel.

Community Relations The IEPA Community Relations staff is used extensively by RPMS. Interacting regularly with project managers, community relations staffers concentrate on answering public inquiries about site status and actions. In addition to holding public meetings, the community relations staff distributes fact sheets on site status, the remedial techniques chosen for a given site, and the hazards associated with 50 common site contaminants.

I. INTRODUCTION

The Illinois Hazardous Waste Cleanup Program began in 1984 under the authority of the Illinois Environmental Protection Act (IEPAct, or the Act). Since that time, responsible parties (RPs) have initiated action on 127 sites, including 74 cleanups, all of which are being overseen by the IEPA Voluntary Cleanup Program.

In addition to taking the lead on or monitoring the 38 National Priorities List (NPL) sites in the State (26 final, 12 proposed), the Illinois Environmental Protection Agency (IEPA, or the Agency) is working on State sites listed on the State Remedial Action Priorities List (SRAPL). Twenty-six of the 29 sites on this list are considered active, and

the other three sites are considered remediated. Eight more sites will be added to the SRAPL in March 1990. Of the NPL sites, IEPA has the lead on about 17 sites, including three RD/RAs.

At present, the State is pursuing treble damages in at least six cases, which are part of over 20 cost recovery efforts. According to the IEPA, a major strength of the program rests in the assumption of joint and several liability; though the IEPAct does not specify such liability, IEPA assumes the Act provides it, because it was modeled on the federal Superfund statute.

Statistics

The federal CERCLIS list for Illinois contains approximately 1245 sites. Federal facilities account for three NPL sites in the State, and the SRAPL contains one Federal site as well (St. Louis Army Supply Center, listed July 1985). Roughly 1150 sites, about 95%, have received preliminary assessments (PAs), and nearly 65% of the total have undergone site investigations (SIs). Approximately 300, or about 25%, of the CERCLIS sites have been listed as requiring no further action. IEPA expects a major increase in CERCLIS listed sites when the State's Responsible Party Transfer Act becomes effective November 1, 1989. Figure IL-1 shows the number of cleanup projects between 1985 and 1989; the number of cleanups completed is shown in Figure IL-2.

The SRAPL uses the federal Hazard Ranking System (HRS) scoring under the 1982 National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Any site scoring 10 or above is eligible to be placed on the SRAPL if it is not listed on the NPL, but the State does not categorize sites as final or proposed like the NPL. In fact, in approaching federal sites, the State does not discriminate between proposed and final NPL sites, treating all sites scoring 28.5 or higher as sufficient threats for remediation. As a result, IEPA has the lead on about 17 NPL sites, while the federal Environmental Protection Agency (EPA) is overseeing about 18 NPL sites in the State.

FIGURE IL-1

Cleanup Projects

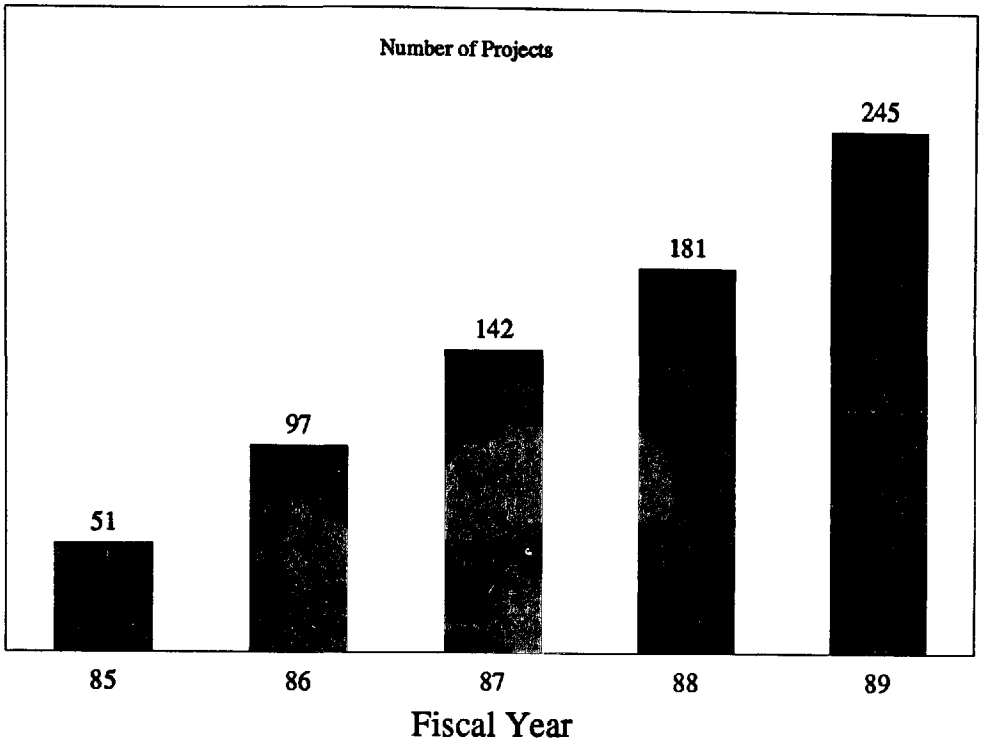
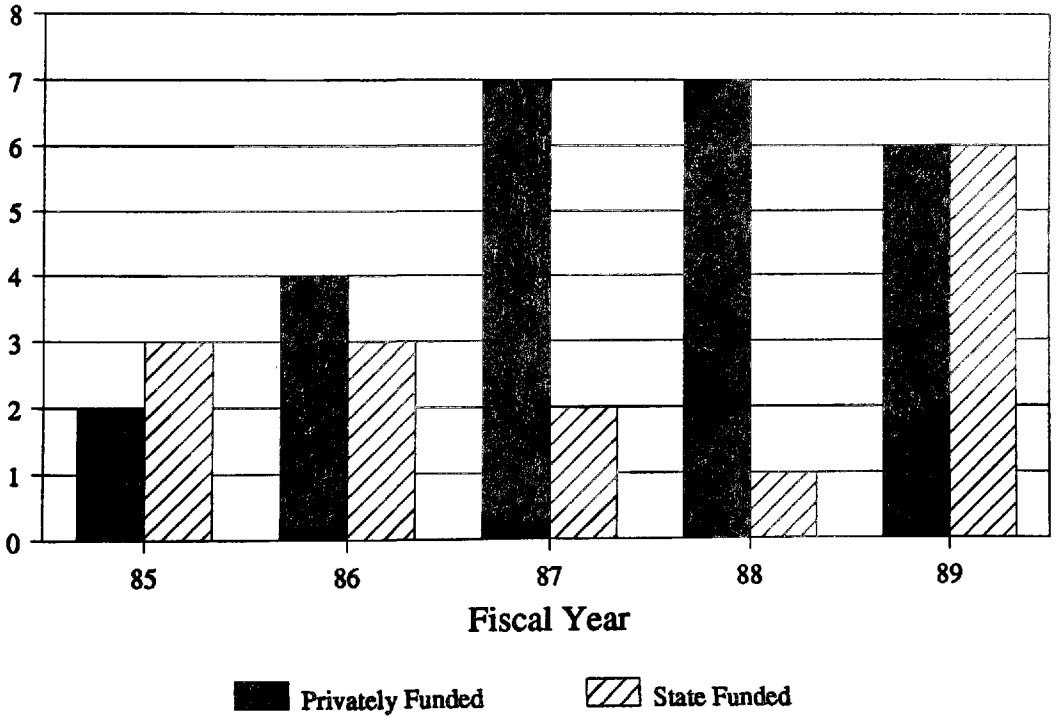


FIGURE IL-2

Cleanups Completed



Program Goals

The goals of the Division of Land Pollution Control (LPC), which is directly responsible for the State's Hazardous Waste Cleanup Program, are varied; they include timely action, cost-effective but permanent remedies, and regular RP participation. These goals merge in the Division's desire to extend the value of the money and resources available to it. Using the various State funds to motivate RPs to conduct cleanup is a key objective in that effort.

LPC officials believe their currently large funding sources are a critical means of motivating RP action, but they worry that State funding may dwindle in the next few years as the expected revenues from the Build Illinois bond program--a major funding source--diminish; the revenues for the debt service of these bonds, a State sales tax on used cars, have not been as substantial as expected. Appropriations will have to cover the difference if the program continues at its current level.

Another major goal of the LPC is to strengthen its relationship with the federal Superfund program. To that end, the State expects to complete its first Superfund Memorandum of Agreement (SMOA) with Region V in early 1990. The major themes of the SMOA are coordination, communication, and information sharing. According to the State, a key point to be covered by the SMOA will involve the timely review of site plans and activities, an issue that has frustrated LPC officials working with EPA Region V.

IEPA hopes to receive more federal monies, among them CORE grants for administrative activity, because the LPC is currently working at what it perceives to be full capacity. If State funds diminish, IEPA hopes to secure more federal resources to conduct cleanup actions, though its higher priority is to induce RPs to conduct such work.

Site Scoring/Activity

Sites are first reviewed by the Pre-Remedial Program in the RPMS State Sites Unit. Consisting of seven staff positions, the Pre-Remedial Program uses federal Management Assistance (MA) monies to conduct PA/SI work.

The Pre-Remedial Program has presided over the PAs performed at roughly 95% of the State sites listed in CERCLIS. The program also reviews CERCLIS sites listed by the federal EPA as "no further response action planned" (NFRAP) to ensure that this designation is warranted according to its own standards. For fiscal year (FY) 1989, this

program expects to conduct 80 PAs and two dozen SIs with a budget in the range of $750,000-1,000,000. The Pre-Remedial Program has worked with a similar budget for the last two fiscal years.

As noted, IEPA uses the HRS to score State sites. Any site scoring 10 or above and not currently listed on the NPL is eligible to be placed on the SRAPL. To date, three of the 29 sites on the SRAPL have been remediated, and IEPA proposes to fund the cleanup of 14 more. There is no official SRAPL delisting process; sites are merely considered remediated. According to IEPA projections, the SRAPL will probably increase to 50 sites by 1993.

A listing on the SRAPL is only one measure used to define cleanup priorities. In fact, some of the worst sites (according to the RPMS staff and managers) in the State would have scored only in the range of three or four, but IEPA acted on them because of their imminent threats. For example, a 140-acre site near Calumet Lake south of Chicago contaminated with lead, arsenic, and other contaminants received a low score because the threat of direct human contact is not a factor in the HRS. IEPA considered the site a threat, because two schools and 5000 people were in the vicinity. Though the site scored too low for federal involvement, IEPA is currently considering incineration there.

II. STATUTES AND STATUTORY PROVISIONS

IEPA draws its authority from the Illinois Environmental Protection Act (IEPAct or the Act), Ill. Rev. Stat. ch. 111 1/2, sec. 1001-1054 (1989)[1], a comprehensive organic statute covering all environmental programs. Originally effective July 1, 1970, the Act has since been regularly amended to provide the program greater authority to remediate abandoned hazardous waste sites.

Illinois Environmental Protection Act

The IEPAct gives the Agency authority to investigate, secure, remediate, and compel the remediation of hazardous waste sites in the State. Section 22.2 (f) of the Act establishes strict liability for owners and operators of facilities from which there is a

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1. References to the Act in the text refer to section numbers as they are found in the Act itself. Thus, section numbers in the text will range from 1-52, not 1001-1052.

release; persons who owned or operated the facility at the time that hazardous substances were received for disposal, transport, storage or treatment; generators[2]; and all transporters regardless of whether they selected the site. Liability covers the State's costs of removal or remedial action as a result of a release or threat of a release. In addition to the defenses allowed in CERCLA, the IEPAct excludes from the liability scheme releases permitted under State or federal law and releases of pesticides in accordance with their labeling or registration.

Section 4q authorizes IEPA to notify potentially liable persons of their liability, of the necessary response action, and of their opportunity to perform the response action. These "4q notices," which is the name given them by State officials, are not enforceable as orders, but they are the trigger mechanism for possible treble damage suits if the RPs fail, without sufficient cause, to take action. These "4q" notices are the primary statutory enforcement tools used by the IEPA and are sent as a matter of practice in all cases.

Liable parties who fail without sufficient cause to take action as requested by the Agency pursuant to a "4q" notice are subject to punitive damages no more or less than three times the State's costs incurred as a result of the failure to take action. Such punitive damages are in addition to the State's costs and any other penalties to which the person may be subject. The State is seeking such treble damages in addition to its response costs in at least six of its 20 cost recovery cases. The Act provides for civil penalties of up to $10,000/day for violations of the Act, but the cleanup program rarely deals with situations that are clear violations of the Act. In addition, IEPA has used §4q notices to seek information about sites and as a basis for negotiating consent orders with RPs. As of April 1989, the State had issued 65 "4q" notices.

IEPA is authorized to take whatever action is necessary to prevent or correct releases or threats of releases of hazardous substances or pesticides into the environment. The Act provides that IEPA may not spend more than $1 million on any single incident without appropriation by the legislature. Agency staff interpret this provision as a limit on the amount that may be spent within a fiscal year.

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2. Generators are broadly defined to include those who arrange with a third party to transport, store, dispose of or treat, at a third party's facility from which there is a release, hazardous substances owned, controlled or possessed by the first party. Ill. Rev. Stat. ch. 111 1/2, sec. 1022.2(f)3.

The Illinois legislature recently authorized the IEPA to attach to property subject to response action under §22.2 of the Act (or to corrective action under §22.18) an "environmental reclamation lien" for the costs and damages for which the property owner is liable.[3] Although the statute states that the environmental reclamation lien is a form of "superlien" in that it takes precedence over all other liens except tax liens, a clause excepting certain other liens makes it unclear what priority this lien enjoys.[4] Amendments to this section in 1989 attempt to clarify that this is a priority lien, not a superlien.

The IEPA has explicit authority to enter any property in order to respond to a release or threat of a release of a hazardous substance or pesticide. The Act does not provide explicit subpoena authority to the Agency.

The Attorney General or the local State's Attorney is authorized to seek injunctive relief whenever there is substantial danger to the environment or to the public health or welfare. Such actions may be filed at the request of the IEPA or based on the independent judgment of the Attorney General or the State's Attorney.

The IEPAct created an independent Pollution Control Board (PCB) of seven technically qualified members appointed by the Governor with no more than four from one party. The PCB meets at least monthly and is charged with adopting regulations and standards under the Act. It also acts as the hearing Board for administrative complaints brought by IEPA charging violations of the Act and for petitions for review of final actions by the Agency.

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3. Ill. Rev. Stat. ch. 111 1/2 §1021.2(a). This section number is expected to change since two bills were passed adding different sections 21.2.

4. Ill. Rev. Stat. ch. 111 1/2 §1021.2(c). This section provides in part: "An environmental reclamation lien shall be superior to all other liens and encumbrances other than real estate tax liens, except that it shall not be valid as to any subsequent *bona fide* purchaser, mortgagee or other lienor whose rights in the real property arose prior to the filing of notice of the lien."

Illinois Responsible Property Transfer Act

The Illinois Responsible Property Transfer Act of 1988 (Transfer Act or RPTA) will broaden IEPA purview of properties being transferred as of November 1, 1989.[5] Under the existing IEPAct, no person in the State may transfer any land used as a hazardous waste disposal site without notifying the Agency of such transfer. The Transfer Act, however, is more sweeping in that it is designed "to ensure that parties involved in certain real estate transactions are made aware of the existing environmental liabilities associated with ownership of such properties, as well as the past use and environmental status of such properties."

The RPTA contains a detailed disclosure form with a variety of questions about the past and present uses of the property.[6] The disclosure document must be given to the buyer and any lender at least 30 days before the transfer of the property. If the disclosure document indicates environmental defects in the property not previously known to the parties, or if the required disclosure is not made, then any party may void the transfer within 10 days of receipt of the disclosure document. Failure to comply with the disclosure requirements may also result in civil penalties of $1000 per day for each violation, and knowingly falsifying such disclosure increases the potential penalties to $10,000 per day per violation.

Within 30 days of the transfer the disclosure document must also be recorded in the recorder's office for the county in which the property is located and filed with the IEPA. For certain transfers a site plan must also be filed with IEPA. The Transfer Act does not specify what IEPA is to do with the disclosure documents that are filed with the Agency. The Agency has been developing plans for what it will do with these documents, however, no funds have been appropriated for IEPA activities under the RPTA.

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5. The Transfer Act becomes effective on November 1, 1989, but the disclosure, recording and filing requirements apply to transfers that occur after January 1, 1990. Ill. Rev. Stat. ch. 111 1/2, §§904(a).

6. A copy of the disclosure form is attached as an appendix to this Chapter.

III. PROGRAM ORGANIZATION

Program Structure

Division of Land Pollution Control The IEPA Division of Land Pollution Control (LPC) contains the Remedial Project Management Section (RPMS), which has the lead on State superfund activities.[7] LPC is divided into five sections: Field Operations (RCRA and CERCLA work), Permits (RCRA), Compliance Monitoring (RCRA), Solid Waste Management, and Remedial Project Management (see Figure IL-3). RPMS splits superfund work into the Federal Sites, State Sites, and Immediate Removal Units. All together, LPC employs 288 people: 170 serve technical roles, 32 managerial, and eight others form a hydrogeological investigation team, which is available to the entire division and regularly aids the efforts of the RPMS.

The Remedial Project Management Section employs 40 of the LPC technical positions and six of the managers, giving it a total of 46 people. Since the RPMS was created in 1984, there has been a turnover of only eight percent. In that period, the staff has shifted from predominantly engineers to a more even mixture of engineers and other professionals, including biologists, chemists, and environmental scientists.

To enhance communications internally, the RPMS avoids guidance documents for its personnel, using US EPA guidance where necessary; a premium is placed on direct, informal communication. Each new site is assigned a project manager, an attorney, and a toxicologist to foster the immediate coordination of management, legal, and technical personnel. These staff (except for the attorneys who are in a separate Division) also typically have their offices near each other.

The State Sites Management Unit contains a Unit Manager, the Pre-Remedial Program, and three SRAPL project managers. To date, the RPMS Pre-Remedial Program has secured eight federal EPA multi-site cooperative agreements, each on the average of roughly $400,000. The manager of the Pre-Remedial Program oversees three geologists, two biologists, and one agriculturalist.

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7. The other divisions in IEPA are Administration, Air Pollution Control, Information Systems, Laboratories, Public Water Supplies, Water Pollution Control, and Enforcement Services.

ORGANIZATION CHART
ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS
JUNE, 1989

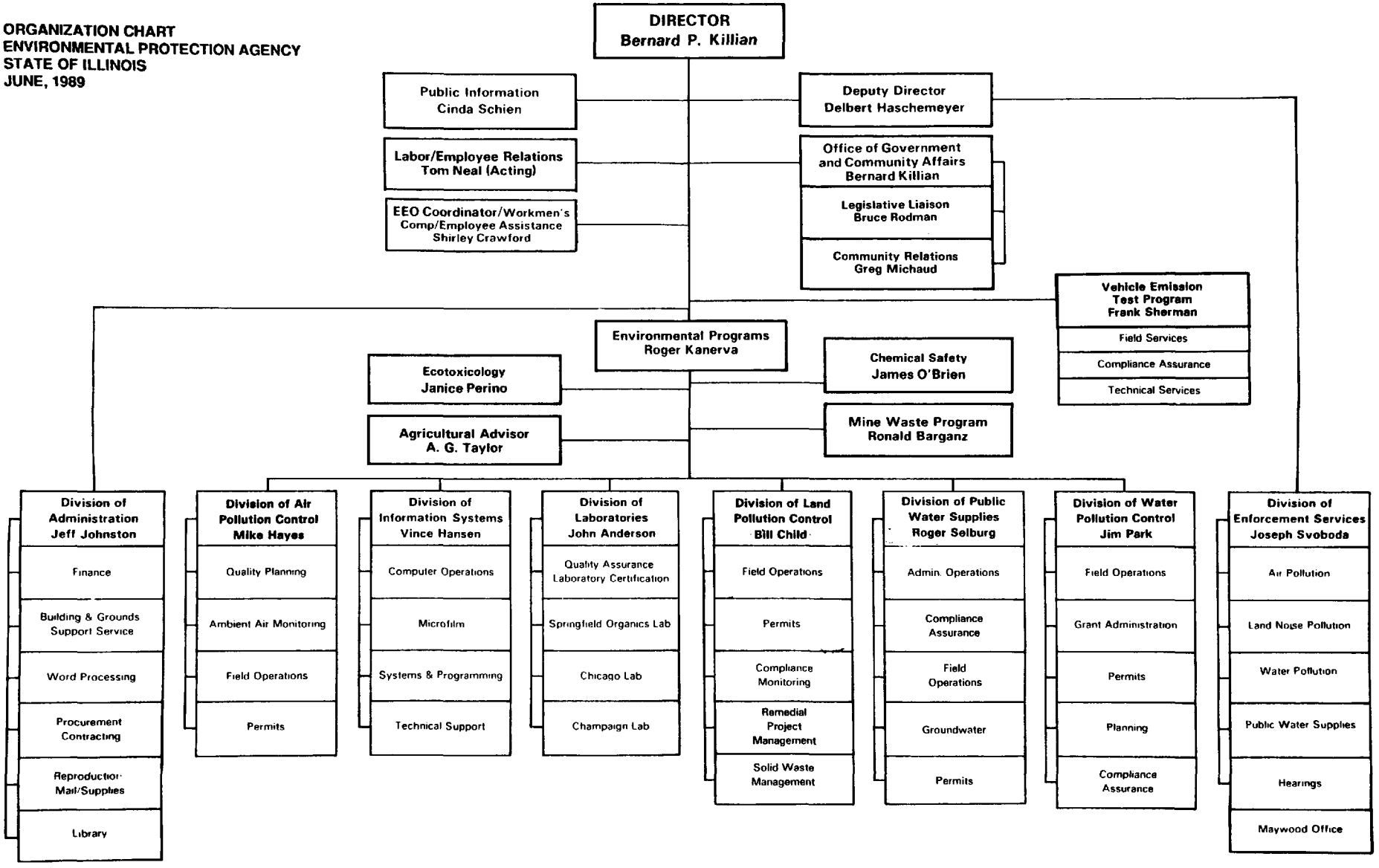

FIGURE IL-3

The Federal Sites Unit contains eleven positions, which include the Unit Manager, an Assistant Unit Manager, and nine project managers; the unit is seeking the creation of additional project manager positions. This unit oversees federal Superfund work, including State-lead work, develops the administrative record, writes the Record of Decision (ROD), and oversees RP work whenever Illinois is given the lead on an NPL site. Thus far, the Federal Sites Unit has conducted about 17 State-leads on NPL sites, and it has written a half-dozen federal RODs. Moreover, the Unit has assumed responsibility for three federal RD/RAs: Velsicol, Belvidere Municipal, and LaSalle Electric. The LaSalle Electric site is a mobile incineration project which is nearing completion of its first ($15 million) phase. The Phase II contract was recently awarded at an approximate cost of $20 million.

In 1984, the Immediate Removal Unit (IRU) employed only its chief. Now, the IRU employs five project managers and the unit chief, all of whom are housed in the IEPA Springfield office. Four additional on-scene coordinators (OSCs) are in separate State offices--one each in Colinsville, Rockford, Maywood, and Springfield--and an engineering firm provides three more OSCs by contract.

The Community Relations program lies under the Agency Director and is available to the entire IEPA. It consists of one supervisor and a staff of eight. According to the program supervisor, LPC has used the community relations program more than any other division. The staff in the Community Relations program are technically trained, with degrees in engineering, geology, and aquatic biology, rather than public relations or journalism. The supervisor strongly believes that technically trained staff with good communication skills are more effective at explaining what IEPA wants to do at a site than public relations specialists who would not understand the project. Moreover, community relations staffers communicate with LPC project managers on a regular and informal basis; the program supervisor advises his staffers to talk with their respective project managers at least every three days about site progress.

IEPA attorneys used by the RPMS are located in the Land Noise Pollution Section in the Division of Enforcement Services. (LPC officials suggested that the name "Land 'Noise' Pollution" is an old misnomer that has yet to be corrected. In actuality, this section covers land pollution issues broadly.) A senior attorney in this division supervises 10 other attorneys, all of whom work on a variety of enforcement cases, not all of them superfund.

IEPA attorneys are aided by lawyers in the Attorney General's Office, six of whom are in Springfield and a dozen of whom are in Chicago.

Pollution Control Board Under the IEPAct, the Pollution Control Board (PCB) consists of seven technically qualified members appointed by the Governor, with no more than four from the same political party. The PCB is an independent administrative body charged primarily with promulgating environmental regulations, and conducting hearings on enforcement variance and administrative review cases. Unlike public boards in some other states the PCB does not directly oversee the work of the IEPA; the PCB and IEPA are independent agencies.

Unlike IEPA, the PCB has the authority to issue administrative orders. As an administrative, adjudicatory body comprised of gubernatorial political appointees, the PCB will hold hearings at the request of IEPA to determine if an administrative order for site work needs to be issued. This option, however, is rarely exercised by IEPA, because the PCB must hold a formal hearing, which delays the process. IEPA prefers to issue 4q notices or to rely on the Attorney General directly. IEPA contends that the PCB is better suited for small cases, while the larger cases are better handled through the 4q process or are brought to the attention of the Attorney General for possible litigation.

Though the PCB is authorized to have an important role in the State superfund program on paper, in fact, it has a minor role. Regulations are actually developed by the LPC, and program officials prefer to rely on cost recovery or the Attorney General's litigation authority. IEPA has not issued formal complaints thus far, an action that would trigger PCB hearings. In short, the PCB is considered a bottleneck, because it is a small administrative body, and LPC officials opt to use enforcement mechanisms they believe are more efficient.

IV. FUNDING

There are four major funding sources for the RPMS, which provided the program over $15 million in 1988 (see Figure IL-4). These sources and their relative contributions are discussed in this section.

Hazardous Waste Fund

The Hazardous Waste Fund (HWF) receives 90% of the hazardous waste fees collected under §22.2 of the Act.[8] These fees apply to treatment and disposal operations, and they are being elevated each year for fiscal years 1989-91 in order to increase the HWF and to encourage waste minimization. Some State officials question whether the increasing fees will reduce the monies this source provides by discouraging the expansion or creation of such businesses in the State and by encouraging waste minimization. Currently, the fees bring in $2.1-2.2 million per year, and the unobligated HWF balance was $4.25 million as of January 1, 1989.

Of the three principal funds, the HWF is the only one with a cap, which is set at $10 million by the Act. If the unobligated funds in the HWF exceed this amount at any time, the treatment and disposal fees will be suspended until the unobligated balance dips below $8 million. According to State officials, this is an unlikely occurrence, because the fund balance is reported monthly, and the amount of work needing funds is constant, making it relatively easy to obligate monies should the fund balance near its ceiling.

The activities for which the HWF may be used include emergency response, immediate removals, CERCLA match, studies and design, remedial actions, and operations and maintenance. In addition, until 1989 the Act required that at least 50% of HWF monies be used for response actions on NPL sites in the State. Legislation passed in 1989 deleted this limitation in exchange for a provision requiring IEPA to manage HWF funds to assure that matching funds are available for NPL sites.

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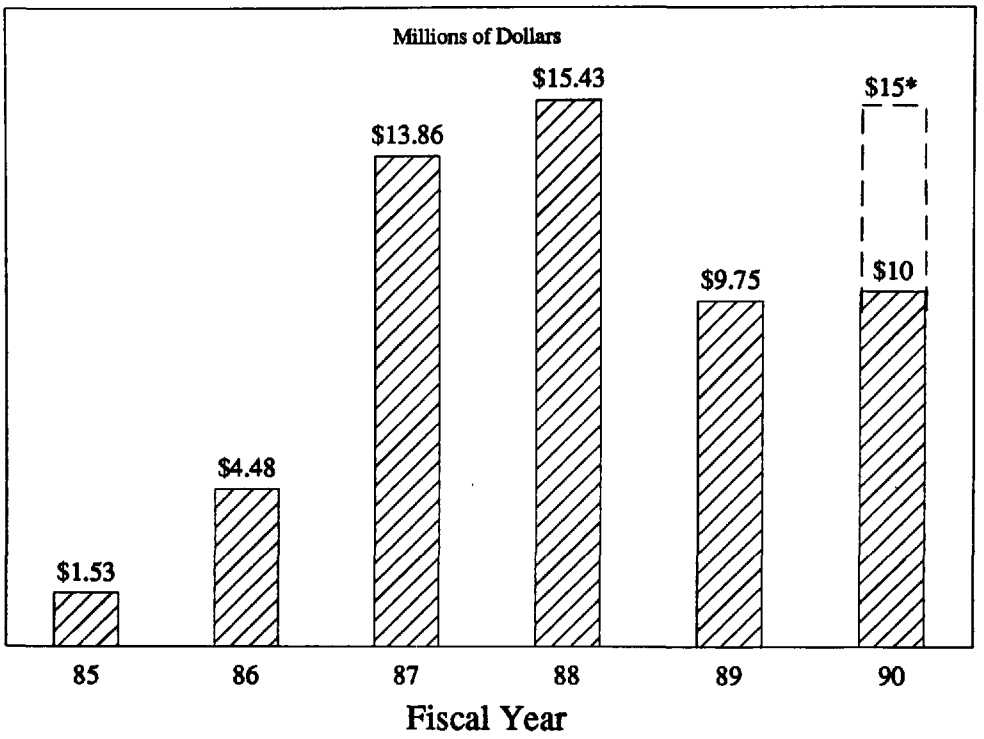
8. Ill. Rev. Stat. ch. 111 1/2 §1022.2(d). The remaining 10% of these fees are deposited into the Hazardous Waste Research Fund, which, *inter alia*, is used to fund research towards reducing the amount of waste produced in the State and to administer the Illinois Health and Hazardous Substances Registry Act. Ill. Rev. Stat. ch. 111 1/2 §1022.2(e).

FIGURE IL-4

Cleanup Expenditures



* Amount depends upon cleanup settlement agreements (Fiscal Year '90 figures are proposed.)

Clean Illinois Fund

The Clean Illinois fund contains State general revenues appropriated for the State-funded Cleanup Program. Receiving roughly $1.6-1.8 million per year, the Clean Illinois Fund covers all administrative and operational costs of the program, including staff and related costs. It may be used for the same activities as the HWF except for State CERCLA match. Although this has been a stable funding source for several years, current State fiscal problems threaten all general revenue sources.

Build Illinois Program

This State bond program that provides money for a variety of improvement projects in Illinois has proven to be a key funding source for the Hazardous Waste Cleanup Program in the last few years. In fiscal year 1988, Build Illinois added $15 million to the LPC's efforts, perhaps the largest single source of monies for the program in one year.

This funding source is diminishing, however, as the used car sales tax created to replenish it has generated less money than expected. Thus, even though the State will use an additional $7 million from this program for cleanup activities in FY 1990, the future of this bond program is tenuous: IEPA officials expect that it may evaporate as a funding source for the cleanup program in FY 91.

Solid Waste Management Fund

The fees for the Solid Waste Management Fund bring in about $18 million per year, of which the IEPA receives 50% or $9 million per year. This money is used for planning and enforcement grants to local governments and to support the Agency's regulatory program. Currently, the cleanup program has no access to this fund on an ongoing basis. As a result of a recent settlement of a lawsuit concerning past fees that have been held in escrow, the IEPA expects to receive a one-time payment of $3-4 million which can be used for remedial investigations at solid waste sites.

Other Sources

IEPA has established a comprehensive cost accounting system to keep track of all of its costs for each site. Staff time, including the Community Relations staff, is carefully recorded, as are contractor costs and other expenses. In the past year IEPA has begun sending quarterly bills to RPs for current oversight and other costs. Bills are sent to all identified RPs and each RP receives a bill for the full amount; the IEPA takes the position that it is up to the RPs to decide how to split the costs among themselves. After a review of its past costs IEPA determined that $40-42 million was eligible for cost recovery. Further evaluation of the cases and documentation led the agency to send bills for about $6.3 million to RPs. As of December 1989 the agency has collected $1.2 million with no further enforcement effort. IEPA is also pursuing cost recovery in about 20 cases and has filed claims for treble damages in 6-7 of those cases.

V. THE REMEDIATION PROCESS

The remediation process begins at site discovery and continues through cleanup and the many years typically required for operations and maintenance. To aid this discussion,

the remediation process is divided into several key subjects rather than an overly-simplified timetable: strategy and current progress, RP participation and the voluntary cleanup program, selecting cleanup standards, the removal program, and the community relations program.

Strategy and Current Progress

The "4q" notice and a willingness to use the various State funds together are the keys to IEPA's enforcement strategy. After discovering and assessing a given site, the cleanup program's remediation strategy begins with the "4q" notice. Composed of two major sections, "Findings of Fact" and "Identified Response Action," the "4q" notifies RPs of their liability and of the potential for treble damages if they do not comply. It is not, however, enforceable as an order unless IEPA files a complaint with the PCB and the PCB issues an order after holding a formal hearing. The "Findings of Fact" section details the actual or imminent danger posed by a site, while the "Identified Response Action" section describes the remedial or removal action responsible parties are expected to perform.

The "4q" notice is vital to the strategy of the program, because it effectively functions as an order. Whether used to request information or work, the "4q" creates a strong incentive for RP compliance, because penalties and treble damages may be assessed for inactivity. Failure to comply with a "4q" identifying work to be performed subjects RPs to treble damages, and any "violation of the Act" subjects RPs to civil penalties up to $10,000 per violation and $1000 per day for continuing violations. As a result, the Agency has been able to motivate RP action despite the lack of actual administrative order authority.

The Agency's knowledge of the strength of the "4q" notice motivates it in part to adhere to negotiation deadlines. Also, IEPA officials assert that their willingness to begin the contracting process for site work immediately after negotiation deadlines is the final impetus for many RPs to assume site remediation. As State officials explain, fund use is their greatest enforcement threat. If the RPs fail to take action the State has sufficient resources and flexibility to begin work itself within weeks. IEPA enforces and pursues cost recovery regardless of whether a site is listed on the SRAPL.

Though the "4q" is less powerful as an information gathering tool, the IEPA supervising attorney working with RPMS contends that site access is relatively easy to

attain. The State's new Property Transfer Law is also expected to add much more information about potential and actual sites in Illinois, thereby lessening the need for IEPA to discover sites by more aggressive means. Finally, as of December 1989, IEPA attorneys have filed or were about to file liens for about $10.4 million under newly acquired lien authority on 15 sites.

RP Participation and the Voluntary Cleanup Program

The Voluntary Cleanup Program is monitoring RP action at 127 sites, including 79 cleanups. IEPA defines a voluntary cleanup as either as one initiated by the Agency and later assumed by the RPs for continued work or as a cleanup initiated by RPs prior to any Agency action. In other words, any RP action is considered voluntary.

The Voluntary Cleanup Program is the fastest growing portion of RPMS. Between August 1987 and August 1988, the number of voluntary cleanups in the State increased by 35%; an even greater percentage increase has occurred in the voluntary cleanups initiated by RPs, as opposed to those assumed by RPs after Agency action. In fact, the majority of newly initiated RP cleanups are connected to environmental assessments conducted in property transfers. The other key types of voluntary cleanups occur during underground storage tank removals and during the remediation of old dump sites.[9]

A key motivation behind voluntary cleanups prior to the advent of the Responsible Property Transfer Act has apparently been the desire of property sellers, buyers, and their agents to assess and mitigate contamination at sites being transferred. Historically, IEPA has served as an on-scene coordinator at these sites, offering technical, cleanup, and quality control advice; occasionally, IEPA has issued environmental releases or certifications of the work performed. Thus, a major impetus behind voluntary cleanups, according to the Agency, is the desire of individuals and companies to determine what constitutes a clean site.

Selecting Cleanup Standards

IEPA project managers undergo a two-step committee process to arrive at cleanup targets for State sites. Making presentations for both committees, project managers in the

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9. Dennis L. Newman and James F. Frank. The Voluntary Cleanup Program in Illinois. Springfield, IL: Illinois Environmental Protection Agency. December 1988.

Remedial Project Management Section review site history and characteristics, the extent and type of contamination, and the potential for human exposure.

The first committee to consider cleanup levels for sites is the Cleanup Objectives Team, or COT. This committee is composed of managers from several divisions in the Agency (e.g., Air Pollution Control, Water Pollution Control), who are generally individuals with technical backgrounds. Their objective is to select health-based cleanup standards.

The Coordinated Review of Permit Application (CROPA) committee, second in the chain, considers the COT cleanup levels and then makes a final determination. The CROPA committee generally begins its consideration of cleanup levels within two weeks after the COT committee is finished. Both the project manager for a site and the COT committee member who wrote the original cleanup recommendation are present for CROPA deliberations. While COT levels may be altered, CROPA levels may not. CROPA levels are final.

CROPA members are higher level administrative managers who use the COT health targets as a guide but also consider the technical feasibility and costs of cleanup targets. According to the manager of the Remedial Project Management Section, while the CROPA committee generally concurs on COT levels, they occasionally ease those levels. In one instance, for example, CROPA raised the COT cleanup target for a contaminant to the threshold of detectable levels.

The Removal Program

Similar to CERCLA, the IEPAct defines removal broadly, and the Agency uses this broad definition to conduct removals that are often akin to expedited remedial actions. At present, IRU is conducting an average of 18 immediate removals per year at an average cost of $300,000-500,000 per removal. Removals are capped at $1,000,000 and six months, but extensions of time and money may be secured with the Director's approval.

An example of how the state uses the removal authority to conduct extensive cleanups is the incineration program. Incineration sites, such as Lenz Oil, invariably exceed the cost ceiling, but effective alternative technologies are a priority with the State; destruction of waste is preferred to mere containment or land disposal. According to the IRU Manager, the estimated cost of incineration is roughly $400 per ton, compared to a cost of $300 per ton for land disposal fees. Thus, the desire to use cost-effective, reliable

technologies such as incineration meshes with the Agency's desire to use its limited resources well. For example, the Lenz Oil incineration site, costing $7,000,000 and having lasted a full year, was considered a necessary and well-spent action.

As early as 1986, IEPA officials appreciated the potential value of incineration for the Remedial Project Management Section. Obtaining a special exemption in the federal Superfund Amendments and Reauthorization Act (SARA), §118(i), the State enjoys eased requirements for incineration permitting. Thus far, IRU has used mobile incinerators at two sites (Lauder PCB site and Lenz Oil) and is planning to use it on a third (Paxton Avenue Lagoons). A fourth mobile incinerator site (LaSalle Electrical Utilities) is being managed by the Federal Sites Unit.

Along with removals, IRU currently oversees 100 voluntary cleanup actions. The unit chief claims this is an extremely cumbersome load for such a small staff, and he hopes to increase his staff in the next year. Yet the money to expand the staff may not be available soon, in large part because the State general revenues have remained relatively stable in the last few years.

IRU uses alternative technologies other than incineration. Cyanide destruction at electroplating facilities, a common class of site in the State, has been used successfully. Low temperature thermal destruction has been useful with compounds in the benzene-toluene-xylene group (BTXs), but not for polynuclear compounds, which do not break down as easily.

Traditional pump and treat methods continue to be commonly used in the State, and IRU has overseen one bioremediation site and at least one site being remediated by air stripping (Morrision City Wells).

The Community Relations Program

According to the supervisor of this program, the public is informed of site activity early for three reasons: 1. The public adds information (e.g., more than a handful of apparently orphan sites had RPs identified by concerned locals); 2. The public needs to be educated (e.g., concerns about health threats, including the safety of remedial actions, are answered by staffers); and 3. The public helps improve remedial actions (e.g., suggested a truck route near one site be altered because of the proximity of a day care center--Byron Salvage).

Informing and educating residents in communities where mobile incinerators have been proposed has been a key asset of the community relations program, according to both the program supervisor and the IRU chief. Emphasis is placed on answering the range of questions asked by community members, often during town meetings. Community relations staffers try to avoid a public debate about appropriate remedy selection but concentrate instead on the pros and cons of a selected remedy and answering questions.

In addition to holding public meetings, the program distributes fact sheets of three general types: 1) Fact sheets covering the hazards and other characteristics of 50 common chemicals; 2) Fact sheets on specific sites for local residents near those sites; and 3) Fact sheets discussing specific remedial techniques, such as incineration, to inform residents about the action that will be taken.

Contracting Procedures

Though IRU has no pre-qualification process for contractor approval, the unit currently uses three labs that meet quality assurance/quality control requirements, four remedial consultants, and four remedial contractors. Any contract anticipated to be in excess of $50,000 is put up for bidding. Bidders are given a chance to visit the site, and requests for proposals are sent about one week later. Contracts are then awarded to the lowest bidder.

VI. PROGRAM OUTLOOK

The advent of the Responsible Party Transfer Act is expected to identify numerous new sites for which PAs and SIs will be necessary. Thus, although IEPA knows the extent of hazards at a large majority of the currently known sites, it expects to have to do evaluations for the foreseeable future.

A major source of funding for cleanups, Build Illinois bonds, is expected to evaporate in the next year or two. At the same time, a number of expensive cleanups are expected to be ready to begin construction, and the overall level of activity for the program is expected to increase. IEPA's enforcement strategy is primarily based on its ability make a credible threat that it will do the work itself if the RPs fail to take the lead. Thus, this

potential loss of a major source of funding could affect the future success of the Illinois enforcement program in addition to its ability to fund its own actions.

Illinois has demonstrated an ability to work with communities and local organizations to improve the quality of cleanups and to avoid obstruction of the cleanup. This program of community relations will be even more important as the number of cleanups increases and as the number of "final" remedies increases.

APPENDIX

ENVIRONMENTAL DISCLOSURE DOCUMENT FOR TRANSFER OF REAL PROPERTY

The following information is provided pursuant to the Responsible Property Transfer Act of 1988

Seller: _____

Buyer: _____

Document No.: _____

For Use By County Recorder's Office

County

Date

Doc. No.

Vol. _____ Page _____

Rec'd by: _____

I. PROPERTY IDENTIFICATION·

A. Address of property: _____
Street City or Village Township

Permanent Real Estate Index No.: _____

B. Legal Description:

Section _____ Township _____ Range _____

Enter or attach **current** legal description in this area:

Prepared by: _____ (name) _____ (address)

Return to: _____ (name) _____ (address)

LIABILITY DISCLOSURE

Transferors and transferees of real property are advised that their ownership or other control of such property may render them liable for any environmental clean-up costs whether or not they caused or contributed to the presence of environmental problems associated with the property.

C. Property Characteristics:

Lot Size _____ Acreage _____

Check all types of improvement and uses that pertain to the property:

_____ Apartment building (6 units or less)

_____ Commercial apartment (over 6 units)

_____ Store, office, commercial building

_____ Industrial building

_____ Farm, with buildings

_____ Other, specify _____

II. NATURE OF TRANSFER:

	Yes	No
A. (1) Is this a transfer by deed or other instrument of conveyance?	____	____
(2) Is this a transfer by assignment of over 25% of beneficial interest of an Illinois land trust?	____	____
(3) A lease exceeding a term of 40 years?	____	
(4) A mortgage or collateral assignment of beneficial interest?		

B. (1) Identify Transferor:

_____
Name and Current Address of Transferor

_____
Name and Address of Trustee if this is a transfer of beneficial interest of a land trust. Trust No.

(2) Identify person who has completed this form on behalf of the Transferor and who has knowledge of the information contained in this form:

_____
Name, Position (if any), and address Telephone No.

C. Identify Transferee: _____
Name and Current Address of Transferee

III. NOTIFICATION

Under the Illinois Environmental Protection Act, owners of real property may be held liable for costs related to the release of hazardous substances.

1. Section 22.2(f) of the Act states:

"Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (j) of this Section, the following persons shall be liable for all costs of removal or remedial action incurred by the State of Illinois as a result of a release or substantial threat of a release of a hazardous substance:

(1) The owner and operator of a facility or vessel from which there is a release or substantial threat of release of a hazardous substance;

(2) Any person who at the time of disposal, transport, storage or treatment of a hazardous substance owned or operated the facility or vessel used for such disposal, transport, treatment or storage from which there was a release or substantial threat of a release of any such hazardous substance;

(3) Any person who by contract, agreement, or otherwise has arranged with another party or entity for transport, storage, disposal or treatment of hazardous substances owned, controlled or possessed by such person at a facility there is a release or substantial threat of a release of such hazardous substances; and

(4) Any person who accepts or accepted any hazardous substances for transport to disposal, storage or treatment facilities or sites from which there is a release or a substantial threat of a release of a hazardous substance."

2. Section 4(q) of the Act states:

"The Agency shall have the authority to provide notice to any person who may be liable pursuant to Section 22.2(f) of this Act for a release or a substantial threat of a release of a hazardous substance. Such notice shall include the identified response action and an opportunity for such person to perform the response action."

3. Section 22.2(k) of the Act states:

"If any person who is liable for a release or substantial threat of release of a hazardous substance fails without sufficient cause to provide removal or remedial action upon or in accordance with a notice and request by the agency or upon or in accordance with any order of the Board or any court, such person may be liable to the State for punitive damages in an amount at least equal to, and not more than 3 times, the amount of any costs incurred by the State of Illinois as result of such failure to take such removal or remedial action. The punitive damage imposed by the Board shall be in addition to any costs recovered from such person pursuant to this Section and in addition to any other penalty or relief provided by this Act or any other law."

4. Section 22.18(a) of the Act states:

"Notwithstanding any other provision or rule or law, except as provided otherwise in subsection (b), the owner or operator, or both, of an underground storage tank shall be liable for all costs of preventive action, corrective action and enforcement action incurred by the State of Illinois as a result of a release or a substantial threat of release of petroleum from an underground storage tank."

5. The text of the statutes set out above is subject to change by amendment. Persons using this form may update it to reflect changes in the text of the statutes cited, but no disclosure statement shall be invalid merely because it sets forth an obsolete or superseded version of such text.

IV. ENVIRONMENTAL INFORMATION

Regulatory Information During Current Ownership

1. Has the transferor ever conducted operations on the property which involved the generation, manufacture, processing, transportation, treatment, storage or handling of "hazardous substances", as defined by the Illinois Environmental Protection Act? This question shall not be applicable for consumer goods stored or handled by a retailer in the same form, approximate amount, concentration and manner as they are sold to consumers, provided that such retailer does not engage in any commercial mixing (other than paint mixing or tinting of consumer sized containers), finishing, refinishing, servicing, or cleaning operations on the property.

Yes _____ No _____

2. Has the transferor ever conducted operations on the property which involved the processing, storage or handling of petroleum, other than that which was associated directly with the transferor's vehicle usage?

Yes _____ No _____

3. Has the transferor ever conducted operations on the property which involved the generation, transportation, storage, treatment or disposal of "hazardous or special wastes", as defined by the federal Resource Conservation and Recovery Act and the Illinois Environmental Protection Act?

Yes _____ No _____

4. Are there any of the following specific units (operating or closed) at the property which are or were used by the transferor to manage waste, hazardous wastes, hazardous substances or petroleum?

	YES	NO		YES	NO
Landfill	_____	_____	Injection Wells	_____	_____
Surface Impoundment	_____	_____	Wastewater Treatment Units	_____	_____
Land Treatment	_____	_____	Septic Tanks	_____	_____
Waste Pile	_____	_____	Transfer Stations	_____	_____
Incinerator	_____	_____	Waste Recycling Operations	_____	_____
Storage Tank (Above Ground)	_____	_____	Waste Treatment Detoxification	_____	_____
Storage Tank (Underground)	_____	_____	Other Land Disposal Area	_____	_____
Container Storage Area	_____	_____			

If there are "YES" answers to any of the above items and the transfer is other than a mortgage or collateral assignment of beneficial interest, attach a site plan which identifies the location of each unit, such site plan to be filed with the Environmental Protection Agency along with this disclosure document.

5. Has the transferor ever held any of the following in regard to this real property?

a. Permits for discharges of wastewater to waters of the State. Yes _____ No _____

b. Permits for emissions to the atmosphere. Yes _____ No _____

c. Permits for any waste storage, waste treatment or waste disposal operation. Yes _____ No _____

6. Has the transferor had any wastewater discharges (other than sewage) to a publicly owned treatment works? Yes _____ No _____

7. Has the transferor taken any of the following actions relative to this property?

a. Prepared a Chemical Safety Contingency Plan pursuant to the Illinois Chemical Safety Act. Yes _____ No _____

b. Filed an Emergency and Hazardous Chemical Inventory Form pursuant to the federal Emergency Planning and Community Right-to-Know Act of 1986. Yes _____ No _____

c. Filed a Toxic Chemical Release Form pursuant to the federal Emergency Planning and Community Right-to-Know Act of 1986. Yes _____ No _____

8. Has the transferor or any facility on the property or the property been the subject of any of the following State or federal governmental actions?

a. Written notification regarding known, suspected or alleged contamination on or emanating from the property. Yes _____ No _____

b. Filing an environmental enforcement case with a court or the Pollution Control Board for which a final order or consent decree was entered. Yes _____ No _____

c. If item b. was answered by checking Yes, then indicate whether or not the final order or decree is still in effect for this property. Yes _____ No _____

9. Environmental Releases During Transferor's Ownership

a. Has any situation occurred at this site which resulted in a reportable "release" of any hazardous substances or petroleum as required under State or federal laws? Yes _____ No _____

b. Have any hazardous substances or petroleum, which were released, come into direct contact with the ground at this site? Yes _____ No _____

c. If the answers to questions (a) and (b) are Yes, have any of the following actions or events been associated with a release on the property?

_____ Use of a cleanup contractor to remove or treat materials including soils, pavement or other surficial materials

_____ Assignment of in-house maintenance staff to remove or treat materials including soils, pavement or other surficial materials

_____ Designation, by the IEPA or the IESDA, of the release as "significant" under the Illinois Chemical Safety Act

_____ Sampling and analysis of soils

_____ Temporary or more long-term monitoring of groundwater at or near the site

_____ Impaired usage of an on-site or nearby water well because of offensive characteristics of the water

_____ Coping with fumes from subsurface storm drains or inside basements, etc.

_____ Signs of substances leaching out of the ground along the base of slopes or at other low points on or immediately adjacent to the site

10. Is the facility currently operating under a variance granted by the Illinois Pollution Control Board? Yes _____ No _____

11. Is there any explanation needed for clarification of any of the above answers or responses? _____

_____

_____

_____ _____

B. SITE INFORMATION UNDER OTHER OWNERSHIP OR OPERATION

1. Provide the following information about the previous owner or any entity or person the transferor leased the site to or otherwise contracted with for the management of the site or real property:

Name: _____

_____

Type of business/ _____

or property usage _____

_____

2. If the transferor has knowledge, indicate whether the following existed under prior ownerships, leaseholds granted by the transferor, other contracts for management or use of the facilities or real property:

	YES	NO		YES	NO
Landfill	____	____	Injection Wells	____	____
Surface Impoundment	____	____	Wastewater Treatment Units	____	____
Land Treatment	____	____	Septic Tanks	____	____
Waste Pile	____	____	Transfer Stations	____	____
Incinerator	____	____	Waste Recycling Operations	____	____
Storage Tank (Above Ground)	____	____	Waste Treatment Detoxification	____	____
Storage Tank (Underground)	____	____	Other Land Disposal Area	____	____
Container Storage Area	____	____			

V. CERTIFICATION

A. Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate.

_____
signatu.

_____
type or print name
TRANSFEROR *OR TRANSFERORS* (or on behalf of Transferor)

B. This form was delivered to me with all elements completed on

_____ 19____

_____
signature

_____
type or print name Eunice Betts Lyles
TRANSFEREE *OR TRANSFEREES* (or on behalf of Transferee)

C. This form was delivered to me with all elements completed on

_____ 19____

_____
signature

_____
type or print name
LENDER

(Ch. 30, par. 906)

MINNESOTA

OVERVIEW

Minnesota has had significant success in eliciting RP participation in hazardous waste cleanups. Through the middle of 1988, Minnesota spent $12.4 million on cleanups at 17 sites, while the Federal government spent $14.4 million on 14 sites and RPs spent or committed $130 million at 73 sites. The State has 42 NPL sites, 158 hazardous waste sites on its Permanent List of Priorities (PLP), and 80 employees working exclusively on Superfund.

RP Participation Liability for sites is rarely contested by RPs in Minnesota, in part because most of the State's hazardous waste sites are industrial and have only one to five RPs. Responsibility for sites is therefore relatively easy to assign. In addition, the liability standard and administrative process are well defined. The Minnesota Pollution Control Agency must request RP action before spending Fund money, but it sets a deadline for RP negotiations and uses the threat of spending Fund money and recovering costs from RPs to encourage the RPs to settle. The Agency insists on full cost recovery for response actions, including administrative costs, and has recovered $4.7 million from RPs.

Property Transfer Provisions Minnesota law provides several incentives to clean up sites when property is transferred. One provision allows the State to place a lien on property on which it has spent State Fund money and not been reimbursed. Another requires the owner of contaminated property to record with the county recorder of deeds an affidavit stating that the property is contaminated, and allows another affidavit to be recorded when the hazardous substances are removed. Minnesota has also started a voluntary property transfer review program, at the request of the business community.

Team Approach The Minnesota Pollution Control Agency uses a team approach to managing sites, assigning to each site a team including a Project Manager, a Technical Analyst, an On-Site Inspector, a Public Information Officer, an attorney, and sometimes an engineer. The team approach provides each site with appropriate expertise and continuity and tends to promote consistency throughout the program. Continuity is also aided by the Program's relatively low staff turnover rate.

Municipal Landfills One likely problem that the Minnesota Superfund program will soon encounter is the need to clean up contaminated municipal landfills. Fifty-four of the 158 sites on the State's PLP are permitted landfills. The Minnesota legislature has set a $400,000 limit on municipal liability for each response action. Under these circumstances the cleanup of 20 municipal landfills would cost the State program close to $100 million. The program has no ready source of funding for a liability of this magnitude.

I. INTRODUCTION

History

After the passage of the federal superfund law (CERCLA) in 1981, the Minnesota Pollution Control Agency (MPCA) began developing its own state superfund program. This was both to enable the state to take on its responsibilities under CERCLA and in anticipation of a parallel state program to handle sites which would not qualify for federal funds. During the first two years, the MPCA concentrated on developing an inventory of state sites and designing a state program in anticipation of state legislation. By 1983,

when legislation was enacted, the MPCA had identified more than 60 sites needing cleanup.

Statistics

Under the Minnesota Environmental Response and Liability Act (MERLA) the State has spent $12,435,600 from the Minnesota Environmental Response, Compensation and Compliance Fund (Fund) in responding to releases of hazardous substances (through the end of FY 88 - 6/30/88). State fund money has been used at 17 sites and also for 250 arsenic-contaminated sites. During the same period the State estimates that responsible parties have spent or committed to spend more than $130 million on response actions on 73 sites. An additional $4.7 million has been paid to the Fund to cover penalties and costs incurred by the MPCA in administering the site cleanup activities. During this time the State has also obtained $14.44 million from the federal Superfund, using it at 14 sites.

Response action has been taken at 104 sites on the state's list, of which 31 are orphan sites or have non-viable RPs. Responsible parties are responding at 70% of the sites and have spent 83% of the total amount of money spent on response actions in the State (ten times the amount spent by the State Fund). Eleven sites have been delisted from the State's Permanent List of Priorities (PLP).

Over the history of the state's superfund program (through FY 88), the MPCA has identified 450 potential hazardous waste sites, including 50 in FY 88. By June 30, 1988, the Agency had conducted 342 preliminary assessments. As of June 1989, the Agency added 19 new sites to the PLP, raising the total number of sites on the PLP to 158. This includes 54 municipal solid waste landfills from which there are documented releases of hazardous substances. The MPCA anticipates adding another 50 sites to the PLP by the end of 1991.

Forty (40) of the sites on the PLP are also on the NPL and are thus eligible for federal Superfund money. Consistent with directives in MERLA, the MPCA is aggressive in seeking to have sites added to the NPL. Thus it sent 17 sites to Region 5 with recommendations that they be included in the most recent NPL updates, but none was proposed to be listed.

At 38 PLP sites the remedial action has been completed and 11 of these sites have been delisted. The other 27 sites are now in the operation and maintenance phase.

These statistics suggest that the State has been successful in shifting the primary responsibility for cleanup to responsible parties. Response actions are moving forward at a steady pace and responsible parties are doing the bulk of the work. RPs are doing the work at roughly 70% of the sites and have spent $10 for every dollar spent from the state Fund.

Site Characteristics The sites in Minnesota tend to be mostly industrial sites with 1-5 RPs, one of which was usually the operator. There are relatively few commercial landfills on the PLP, although municipal landfills are probably the second largest category of sites. This has made RP searches and negotiations relatively simple. Many of the RPs on the industrial sites are large, viable and visible Minnesota corporations that apparently believe it is in their corporate best interest to cooperate with the agency and clean up sites themselves.

Groundwater contamination is the most common and most serious problem at sites listed on the PLP. Approximately 70 - 75% of the State's population depends on groundwater for its drinking water. Thus, remedial actions are generally controlled by the need to ensure that groundwater is safe for human consumption.

Program Goals

In its 1988 annual report to the legislature, the Agency laid out the following goals for the future of the superfund program:

- continue efforts to identify new hazardous waste sites in the state;
- as required by MERLA, aggressively seek out responsible parties;
- maximize the use of federal Superfund dollars, including continuing efforts to secure federal Superfund dollars for program management and response actions at specific sites and negotiating with EPA to obtain federal Superfund dollars for enforcement activities at specific sites;
- continue to place a higher priority on sites at which response actions are currently underway rather than starting remedial work on new sites; work on new sites will be initiated only as staff resources become available.

The agency stated that these priorities were consistent with its overall program goals of achieving site cleanups which are "adequate to protect the public heath and environment, cost-effective and are conducted in an expeditious manner."[1] Agency officials characterize the State's cleanup objectives in these same terms emphasizing protection of public health by reducing the worst risks without necessarily eliminating risks by, for instance, cleaning a site to background levels.

II. STATUTE

On July 1, 1983 the state passed its own superfund law, the Minnesota Environmental Response and Liability Act (MERLA, Minn. Stat. 115b.01 - .24). The law gives the MPCA the authority to require cleanup of sites that threaten human health and the environment and also provides funding for the MPCA to take action at sites where RPs are unavailable, unable or unwilling to do so, and subsequently to recover the costs from any viable RPs.

MERLA establishes protection of public health and the environment as the goal of the state superfund program.

MERLA clearly places a priority on RP- rather than fund-financed cleanups. The law requires the MPCA to request RPs to take action before using the state's fund, except for emergency removals.[2] The statute also prohibits the agency from using the state fund for any removal or remedial actions for which federal Superfund money is available in a timely fashion.[3]

Within the above constraints the MPCA may take removal or remedial action whenever there is a release or substantial threat of a release of a pollutant or contaminant which presents an imminent and substantial danger to the public health or welfare or the

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1. MPCA Report on the Use of The Environmental Response Compensation and Compliance Fund During Fiscal Year 1988, 14 (1988).

2. Minn. Stat. 115B.17(a)(1) & (b).

3. Minn. Stat. 115B.20 Subd. 3.

environment or a release or threatened release of a hazardous substance.[4] This standard is virtually identical to the one in sec. 104 of CERCLA.

The Minnesota statute explicitly provides that responsible parties are strictly liable, jointly and severally, for response costs[5] incurred by the state or any other person and for damages to natural resources.[6] Responsible parties who are held jointly and severally liable are, however, entitled to have the jury (or the judge in a non-jury trial) apportion liability among the RPs.[7] In apportioning liability the jury must consider: 1) the extent to which each party's contribution to the release can be distinguished; 2) the toxicity of the substance contributed; 3) the amount of substance contributed; 4) the degree of care used by the party handling the substance; 5) the cooperativeness of the party with federal, state, or local officials; and 6) the party's knowledge of the hazardousness of the substance.

Responsible persons are defined to include owners or operators of the facility at the time the substances were placed there, were located there but before the release, or during the time of the release or threat of release; persons who owned or possessed the substance and arranged for the disposal, treatment, or transport of the substance; or persons who knew or should have known that waste they accepted for transport, treatment, or disposal was hazardous (or a pollutant or contaminant) and selected the facility or disposed of it illegally.[8] Landowners may also be RPs but only if they knowingly permitted waste disposal or generation, treatment, storage, disposal, or transport of hazardous substances on the site; knew or should have known that a hazardous substance was located on the site; or significantly contributed to the release after the person knew or should have known of the presence of a hazardous substance.[9]

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4. Minn. Stat. 115B.17 Subd. 1.

5. Responsible parties are not, however, liable for costs of responding to releases of pollutants or contaminants or for damages from such releases. Minn. Stat. 115B.04 Subd. 2.

6. Minn. Stat. 115B.04 Subd. 1.

7. Minn. Stat. 115.08 Subd. 1.

8. Minn. Stat. 115B.03 Subdiv. 1.

9. Minn. Stat. 115B.03 Subd. 3.

MERLA provides certain specified defenses to the otherwise strict liability. These include the ones provided in CERCLA, but also absolve RPs of liability if the release was an act of vandalism or sabotage or in a "son of superfund" situation where the MPCA or EPA removed materials to another site from which there was a release.

MERLA contains a mix of enforcement provisions but they are not as extensive as those contained in CERCLA, for example. The MPCA is authorized to recover its costs from RPs and its certification of those costs is considered prima facie evidence of their validity.[10] Mandatory injunctive relief is available if the Agency chooses to compel an RP to take action.[11] Civil penalties of up to $20,000/day are also available if an RP fails to take response action in a timely manner.[12] Punitive damages for unreasonable failure to take a response action are not available under MERLA.

The Agency has very limited authority under MERLA to administratively order an RP to act. For example, although RPs have a duty to answer MPCA requests for information, the Agency has no specific authority to order RPs to respond. The Agency does, however, have subpoena authority and has used it successfully in the few instances where RPs failed to respond to information requests.[13] Similarly, the Agency has no authority to administratively order a property owner to provide access, but has been able to obtain court orders to allow access the few times it has been refused. Finally, MERLA contains no general administrative order authority. The Agency is required to "request" RPs to take a response action before it may spend Fund money, but the request is not enforceable.

Two provisions of Minnesota law create incentives, at the time of property transfer, to clean sites. One allows the state to place a lien on any property on which the state has spent Fund money for cleanup but has not been paid. Then, the debt to the state must be paid if the property is sold. This is only effective if the property has some value and thus

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10. Minn. Stat. 115B.17 Subd. 6.

11. Minn. Stat. 115B.18 Subd. 2. & 4.

12. Minn. Stat. 115B.18 Subd. 1. MPCA officials state that they have not been confronted with a situation where all viable RPs refused to take the requested action or pay for the Agency's expenses and thus the Agency has not invoked the civil penalties section.

13. Minn. Stat. 115B.03 Subd.2.

works best where the RA is complete and the specter of a contaminated site has been diminished. The other property transfer provision requires owners who know or should know that their land was the site of a hazardous waste disposal facility or is subject to "extensive contamination by release of a hazardous substance" to record an affidavit stating those facts with the county recorder of deeds. If the owner removes the hazardous substance and all residues and contaminated soils then the owner may record another affidavit stating that the substances were removed.

The Minnesota legislature also created a separate victim compensation fund, called the Hazardous Substance Injury Compensation Fund.[14] This fund is administered by a 5 member Board which is authorized to pay victims' claims for medical expenses, lost wages (up to 2/3 or $24,000), death benefits, loss of household labor, decrease in property value of principal residence (up to $25,000), and costs of replacing a primary source of drinking water.[15]

III. PROGRAM ORGANIZATION

Program Structure

The Commissioner of the MPCA is responsible to the Minnesota Pollution Control Agency Board (MPCA Board), a public body composed of nine citizens appointed by the Governor. The Governor is required to appoint a range of individuals reflecting both geographical and occupational diversity. The Board meets monthly and must approve all major decisions to take actions at a site.

The MPCA is divided into four divisions--Ground Water and Solid Waste, Water Quality, Hazardous Waste, and Air Quality--and regional offices. The Division of Ground Water and Solid Waste handles all Superfund sites with some technical assistance from other divisions as required. Within the Division three Sections--Site Response, Solid Waste, and Program Development--have superfund responsibilities.

The Site Response Section is primarily responsible for implementing MERLA at traditional superfund sites. In the past the Section was divided into a Superfund Unit,

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14. Minn. Stat. 115B.25 - .37.

15. Minn. Stat. 115B.34

responsible for State and federal-financed cleanups, and two Responsible Party Units, responsible for obtaining cleanups by responsible parties. Recently, however, the Agency has decided to move away from this Fund/RP division of responsibilities, at least partly because all sites start out as RP- or enforcement-lead sites. Eventually the Agency intends all three units to have equal responsibility for Fund- and RP-financed cleanups. This is a reflection of the general management position in Minnesota that there should be no differences in how fund-lead and RP-lead sites are managed. Having both types of site-funding in each unit provides greater continuity if a site changes from, for instance, fund-lead for the RI/FS to RP lead for the RA. The Unit supervisors also see advantages to the staff in gaining experience in both contracting and enforcement.

A Site Assessment Unit in the Program Development Section performs preliminary assessments of hazardous waste sites, scores the sites according to the Hazardous Ranking System (HRS), updates the State Superfund Permanent List of Priorities (PLP), and assists with the voluntary property transfer program.

The Solid Waste Section also has a Superfund Unit that takes action under MERLA at sanitary landfills that have confirmed releases of hazardous substances.

The Agency receives legal support from the Attorney General's office. The attorneys are housed in the MPCA's building so they are readily accessible.

Staffing

The MPCA has over 80 personnel who work on the superfund program. According to MPCA's FY88 report to the legislature, 31 FTEs are funded by federal Superfund dollars, and 54 FTEs are paid for by the State Fund. Many other personnel in the Ground Water and Solid Waste Division may occasionally work on superfund related projects and the state's Fund does pay for parts of these positions. The Director's office has four management positions, one clerk, and the Division's three Public Information Officers all assigned to superfund work.

Most of the personnel are located in the Site Response Section. The Section has 43 positions including 4 management and 6 clerical positions. Sixteen (16) Project Managers oversee all aspects of the work on a given site. The Project Managers come from a wide range of backgrounds but have often come from enforcement positions in other MPCA programs or worked their way up from on-site inspectors. Because no particular technical

expertise is required of the project managers the Agency is increasingly looking for talented "generalists" to fill these roles. In support of the project managers there are 14 Technical Analyst positions filled by hydrologists and a few engineers, soil scientists and chemists. There are also 4 On-Site Inspector (OSI) positions. The On-Site Inspector is an entry level position. The OSI is the person at the site overseeing work by the RP or contractor.

A little more than half of these 43 positions are funded by the state fund. The rest of the funding comes from a mix of CORE grants, site-specific cooperative agreements, and multi-site cooperative agreements.

The Program Development Section's Site Assessment Unit has 13 positions. Three (3) hydrologists and 6 on-site inspectors are funded by a PA/SI grant to do all of the state's site assessment work. Two additional inspectors work with two clerks on property transfer questions and are funded separately by the property transfer program. Additionally, the four clerks and the Section Administrator receive fully half of their funding from the PA/SI grant and the state Fund.

The Solid Waste Section's Superfund Unit has 10 staff including one supervisor, 4 project leaders, 3 hydrologists, and 2 On-Site Inspectors. They receive almost two-thirds of their funding from the state fund. The rest of their funds come from site-specific cooperative agreements and 0.5 FTE from a CORE grant. The Solid Waste Section receives an additional 9 FTE from the state fund. This seems to indicate that the solid waste section's superfund responsibilities are a proportionally larger (personnel) burden on the fund than the site response section because federal and site-specific funds are lacking.[16]

Decisionmaking - Site Teams

Once a site is placed on the Superfund list--following PA/SI and scoring--a site team is assigned to the project. Team members serve on a number of sites, including both fund- and RP-lead sites, providing ample opportunity for exchange of knowledge and contributing to consistency of the Agency's approach across sites. The dynamics of any given team will vary with the nature of the site and the personalities on the team. Exceptionally problematic sites may require the team to meet regularly to discuss strategies.

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16. For a further discussion of the problems posed by solid waste landfills and the absence of a program to deal with them see VI Special Topics *infra*.

At more routine sites, the team may never assemble as a whole, but at any given site there is always a clear definition of responsibilities among Agency personnel. Generally, the team members are drawn from the same unit, except for the attorney and the PIO, thereby ensuring proximity and availability. The team approach allows individuals to focus on their area of expertise while ensuring that every site is addressed with the proper mix of skills. The team approach also minimizes the problems of staff turnover since the size of the team ensures that there will always be a staff member who is familiar with the site and its history.

The primary member of the team is the Project Manager, who serves as general coordinator, manages project budgets, ensures that schedules are met, and serves as first point of contact for information on an assigned Superfund site. The Project Manager is also the Agency's representative in negotiations with RPs, though the Unit supervisor, the attorney, and the technical analyst will usually be present to assist him or her. Project Managers generally handle between 4 and 6 sites at one time. Project Managers are the highest level pollution control specialists (PCS 4). They often have a degree in science and previous experience in the Agency. In the past, Project Managers have tended to come out of enforcement programs in MPCA with 4-5 years of experience. The role requires more managerial skills than technical ones, however, and the Agency is increasingly seeking talented "generalists" to fill these positions.

The Technical Analyst provides the necessary technical expertise to the team, generally for about 6 to 8 sites. The Analyst reviews technical ground water and soil data, usually provided by contractors for the RPs or state and federal contractors. Most often these positions are filled with hydrogeologists (BS in geology with coursework in groundwater), although engineers, chemists, and soil scientists may also be used. An effort is made to match the expertise of the technical analyst with the type of problems which characterize the site. Although Technical Analysts can also rise to the highest level, the Agency seems to be having the most difficulty finding and keeping hydrogeologists, in part due to the high salaries offered by contractors.

Each team also has an On-Site Inspector who oversees field work to ensure that it is done correctly. Usually, this is an entry-level job at the Agency and entails travelling to sites to split samples, oversee the removal of contaminated soils, and perform similar on-

site oversight tasks. Inspectors are usually responsible for a dozen or more sites. Frequently, inspectors are promoted to Project Managers or Hydrogeologists after 3-4 years.

Finally, each team is assigned a Public Information Officer (PIO), who handles inquiries from the press and the public, and an attorney from the Attorney General's office, who provides legal advice and, if necessary, representation. All of the superfund sites, as well as other types of sites handled by the Division, are handled by 3 PIOs. Twelve attorneys from the AG's office handle MPCA work and have their offices in the MPCA's building. Currently, only 2 attorneys split the Superfund case load. As many as 6 have been assigned at one time and 4 is thought to be the ideal number.

The Superfund Unit of the Solid Waste Section also uses the team approach when addressing sanitary landfills with known hazardous waste releases. However, the nature of landfills requires that, in addition to the hydrogeologist, there be an engineer on each team in order to review the engineering aspects of the problem.

IV. FUNDING

Sources

MPCA's superfund program is funded through three sources, the Fund established under MERLA, RP dollars committed for site-specific actions, and federal Superfund dollars for both site-specific and more general actions. The MERLA Fund balance on June 30, 1989 was approximately $13 million. Since the passage of MERLA in 1983, RPs have committed an estimated $130 million towards site cleanups, and have paid $4.7 million in penalties and reimbursement of MPCA costs into the Fund. In that same time period, the MPCA has secured a total of $14.44 million in federal Superfund dollars.

The Fund was established in 1983 with an appropriation of $5 million. In 1988 an additional $4.5 million was transferred to the Fund from the Water Pollution Control Fund. The legislature recently appropriated an additional $1 million for FY90 and $1.5 million for FY91. In addition to these ad hoc appropriations the Fund receives money from a tax on generators of hazardous wastes ($5.1 million to date), from penalties and recovery of state costs from RPs ($4.7 million to date), and from interest on investments of the Fund ($2.7 million to date).

Of these sources the only continuing source of money is the tax on generators, which has contributed less than 25% of the total amount made available to the Fund through the end of FY 89. The legislature has shown a willingness to continue appropriating money to the Fund but agency officials perceive some reluctance to continue adding large amounts to the Fund when it has been making significant amounts of money investing its relatively large balance.

The State takes the concept of a revolving fund seriously, viewing the Fund as useful for emergencies and for leverage against reluctant RPs. With the exception of emergency actions, MERLA specifies that the Agency must seek RP action or federal monies before using the Fund. Thus, Fund money may only be spent after the Agency has issued a Request For Response Action (RFRA) to known RPs and the Pollution Control Agency Board has made a formal Determination of Inadequate Response and authorized use of the Fund.

In instances where Fund money is spent, the MPCA makes every effort to recover all of its site-specific costs. From a very early stage, the Agency carefully accounted for all of its administrative costs on a site specific basis. One example of the Agency's success in this area is the established system of "billing" RPs annually for MPCA oversight costs on sites currently undergoing studies and remedial actions. The Agency has experienced no resistance to this system.

The State has also been successful in securing federal Superfund monies. Currently, MPCA has cooperative agreements with EPA which provide funds for work at fourteen NPL sites. In addition, all of the PA/SI work is funded by federal dollars, and a CORE grant funds several management positions in order to assist in program development. The Agency is currently engaged in negotiations to secure federal funds for site-specific enforcement activities.

Uses

The Fund may be used for emergency actions such as providing alternative drinking water supplies, removals, CERCLA matching funds, investigations, studies and cleanups of sites not eligible for CERCLA funding, activities related to restoring or replacing damaged natural resources, and administrative and enforcement costs attributable to the superfund

program.[17] The state Fund may also be used to respond to releases at municipal landfills permitted by the MPCA. The Agency has also used the Fund to respond at 250 sites of arsenic contamination stemming primarily from the common use of arsenic as a pesticide in the 1930s.

V. THE REMEDIATION PROCESS

Strategy

The MPCA has an enforcement-first bias that shapes the remediation process. The Agency seeks to identify RPs as the site proceeds through PA/SI and is scored. The Agency then moves quickly to issue a RFRA to the RPs and--if the site scores high enough--to place it on the NPL. The Agency offers RPs the opportunity to sign a consent order after the RFRA is issued. The possibility of using the Fund only comes into play in emergencies, or in cases where it has become obvious that neither private or federal dollars will be available for cleanup.[18]

Site Response Process

The MPCA may discover a potential site in a variety of ways, ranging from citizen complaints to information from local government officials or other state agencies to inquiries from industry or landowners seeking to transfer property. When a site is identified as posing a threat to public health or the environment the Agency begins a superfund process which closely parallels the federal routine. The standard administrative/ enforcement process described below may vary for emergencies like spills and explosions that require immediate action, or if RPs come forward and are involved at the site at a very early stage.

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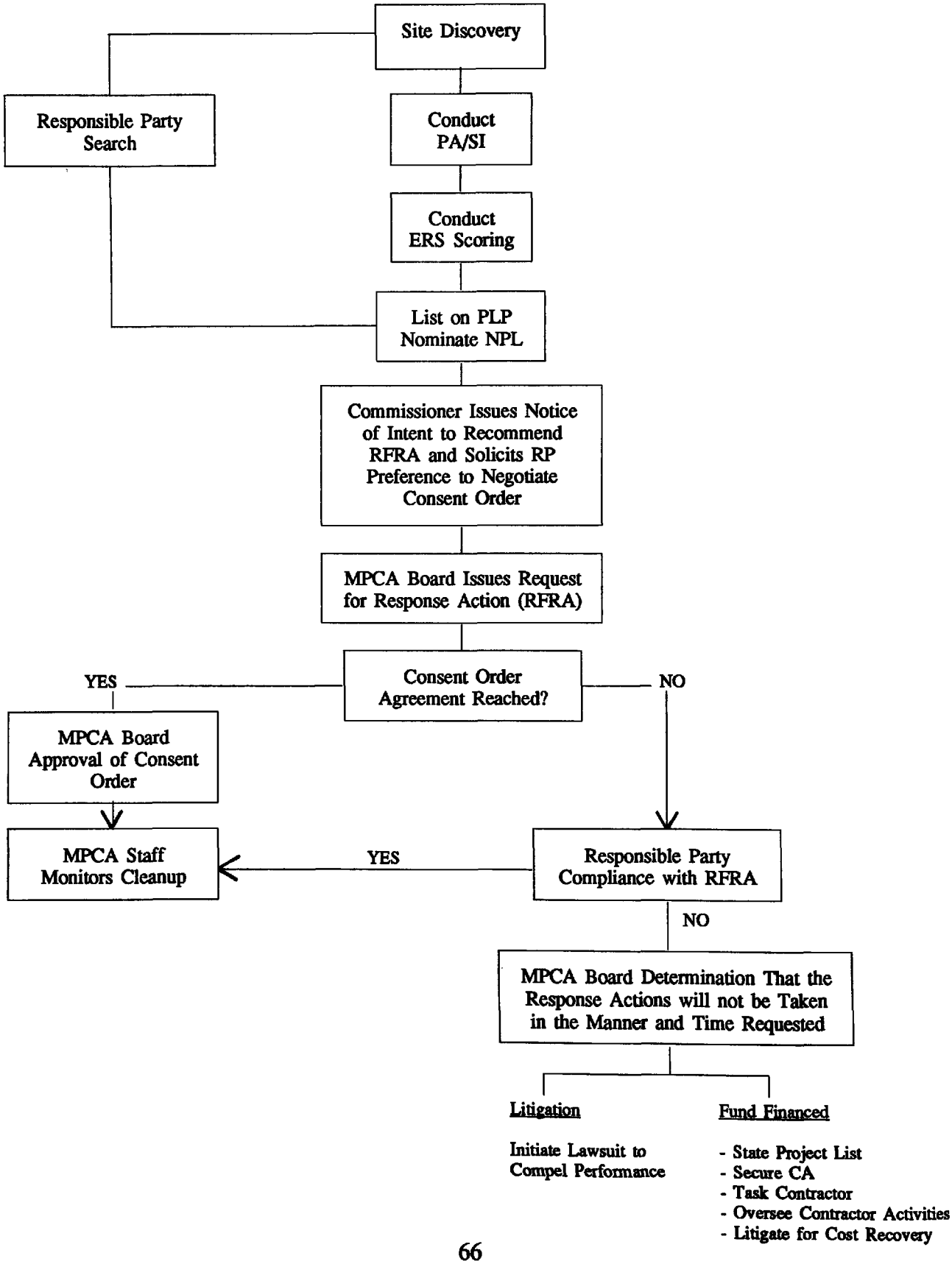
17. Minn. Stat. 115B.20 Subd.2.

18. The enforcement process is described in more detail in Obtaining RP Participation, below, and in a flow chart prepared by the MPCA included as Figure MN-1.

FIGURE MN-1

MPCA ADMINISTRATIVE/ENFORCEMENT PROCESS UNDER MERLA



PA/SI First, a "preliminary assessment" or PA is made. MPCA and other state and private records are searched in an attempt to construct a history of the site's use, the presence of known or alleged hazardous substances, and the potential impact on nearby populations and the environment. As part of the site history, the Agency identifies any potential RPs with connections to the site and/or the substances at the site.

The PA is followed by a more extensive on-site inspection, which the Agency calls its "screening site inspection." This inspection may include limited testing of the soil, air, and ground and surface water. A survey is taken to identify site structures, characteristics, monitoring wells, sampling locations, drums, bulk tanks, and roads or other boundaries. Nearby residential areas, public buildings, drinking water sources, and sensitive natural resources are identified as potentially impacted areas. If owner or operator records have been identified for the site, they are reviewed at this time.

Scoring and Listing After the screening site inspection, the Agency usually has a good idea of how serious a problem the site poses. Staff will then conduct a more thorough inspection of the extent of contamination. Typically more monitoring wells are installed at this time. Data collected during this stage is used to score the site. The federal Hazardous Ranking System is used with some small modifications to account for particular conditions in Minnesota. If the site scores high enough it will be proposed as an addition to the National Priority List (NPL). If not, it will be included on the state's Permanent List of Priorities (NPL sites are also included on the PLP). The score reflects a relative ranking of the actual or potential risk posed by the site and the Agency uses the ranking to help determine what priority to give each site.

Early in the program, the Agency sometimes informally deferred proposing sites for inclusion on the NPL as leverage for RPs to sign a consent order for the entire cleanup action. More recently, however, EPA has slowed down its listing of sites on the NPL, so this strategy is no longer viable.

Obtaining RP Participation The RP search continues throughout this process of identifying and characterizing the hazards posed by a site. Thus, at the time of listing, the Commissioner should know if there are any viable RPs and is able to issue a "Notice of Intent to Recommend RFRA." This notice alerts the RPs that the Agency staff will be

asking the MPCA Board to name them as RPs on the site and to issue a Request For Remedial Action (RFRA) to the RPs. At the time of the Notice, the RPs are asked if they intend to negotiate a consent order.

Following the Commissioner's Notice the RFRA is issued by the Board. The Board must make the following five findings before issuing a RFRA: 1) that there is a facility; 2) that there is a release or threatened release into the environment; 3) that the release involves hazardous substances, or pollutants or contaminants which present a danger to the public health or the environment; 4) that the release is from the facility; and 5) that the person to whom the request for response is directed is a responsible party. The RFRA outlines in broad strokes the type of investigations needed at the site and directs the RPs to undertake these investigations and the remedial actions that the MPCA determines are necessary based on the investigations. It also establishes a schedule for these activities.

The Agency sets a deadline for the end of negotiations, usually 90 days, and prepares to go to the Board for authorization to spend Fund money if there is no progress. The Agency is willing to extend the deadline (there is no statutory deadline) if negotiations appear to be progressing but will not let them drag on. Most of the negotiations are completed within 4 months. Regardless of whether the parties sign a consent order, the Agency issues a RFRA (if one has not already been issued). If the RPs do not sign a consent order the MPCA offers them the option of complying with the RFRA or having the state contract for the work and recover the cost later. About half of the RPs comply with the RFRA without signing a consent order, particularly when the RFRA covers the RI/FS.

While the RP community has traditionally been cooperative in Minnesota, the Agency has noted an increasing trend away from signing consent agreements at the RFRA stage. Possibly to bolster their claims against their insurance companies, the RPs are now more likely to wait for the formal issuance of a RFRA to act on a site. This may also be due to the agency's insistence that any consent agreement include a commitment from the RP to take all response actions that the agency determines are necessary. Instead of signing a "blank check" at the beginning of the process, the RPs are doing the RI/FS under the RFRA and then signing Consent Agreements for the Remedial Action after the remedy is chosen when they have a better idea of the projected costs.

In the few cases where RPs fail to comply with the RFRA, or fail to negotiate after the RFRA, the Agency returns to the Board for a Determination of Inadequate Response. At that time, the Board usually grants the Agency the power to fund-finance the cleanup or to litigate to compel action. Generally, the Board will authorize the MPCA to pursue any of its options.[19] Since the Board meets each month the Agency is generally able to obtain authorization to act without significant delay.

Liability is rarely contested by RPs. This may be because the liability standard in the statute is clear and there are no significant unsettled legal issues. It is more likely that the types of sites found in Minnesota, i.e. industrial sites where a single company (or very few) disposed of wastes, mean that it is relatively easy for the agency to find the RPs and tie them to the site with solid evidence.

The Agency avoids apportionment issues. MPCA officials insist that since RPs are jointly and severally liable to the State it is the responsibility of the RPs to decide among themselves how much each will pay. The staff notes that the state has no knowledge, expertise or interest in the art of allocating liability shares.[20] In fact, the MPCA refuses to negotiate with all of the RPs at sites where there are more than 3-5 RPs. The state insists that the RPs form a negotiating committee and the MPCA deals with the committee.[21]

On the other hand, if only one RP wishes to negotiate the MPCA is willing to do so and does not actively attempt to draw other RPs into the negotiations. The Agency does name all the known RPs in the RFRA and makes other records available but leaves it to the RPs to bring other RPs to the table.

On a related issue, the State has an absolute policy against mixed funding. The Agency's position is that mixed funding is inconsistent with the concept of joint and

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19. Apparently the only exception is when the defendants are small ("Mom & Pop") businesses, which the Board is reluctant to pursue.

20. The statute supports the Agency's position in that it provides that RPs are entitled to have the trier of fact apportion liability after the RPs are held jointly and severally liable to the state. Even then the burden is on the RP seeking apportionment to show how liability should be apportioned. Minn. Stat. 115B.08 Subd. 1.

21. The MPCA will make all of its files available to all the RPs to facilitate their internal negotiations on cost shares.

several liability to the State. If EPA agrees to mixed funding at a site the MPCA will withdraw from joint negotiations and refuse to be a party to the settlement.

Points of contention in negotiations include the scope of studies and cleanup, covenants not to sue, stipulated penalties, and the determination of facts. RPs are particularly anxious to make the Determination of Facts section of a Consent Agreement as vague or general as possible because they fear plaintiffs will use those Determinations in toxic tort suits.

Typical Site Timeline The preliminary work by MPCA--the preliminary assessment and investigation, RP search, RFRA, and consent order--takes an estimated 3-6 months to complete, though this may vary greatly from site to site. After that the cleanup process goes through the same five steps as at the federal level. For fund-financed sites the Remedial Investigation (RI) generally takes 12-24 months and costs anywhere between $50,000-$750,000. The Agency is currently pursuing the possibility of developing in-house (as opposed to outside contractors) capability for conducting fund-financed RIs. It believes this would streamline the process, saving both time and money, and produce more reliable information.

The Feasibility Study (FS) draws on the information collected in the RI to consider a variety of cleanup alternatives. The Agency believes that it should move towards more generic types of FSs. The experience of the past 6 years has convinced the MPCA that certain types of sites, large solid waste landfills, for example, will always require certain types of remedies. It believes the time and money saved would outweigh the potential drawbacks of such generic studies. Currently, an FS lasts from 3-6 months and costs $25,000-250,000.

The Remedial Design (RD) takes 6-12 months and costs $30,000-300,000. At this stage specific engineering plans and specifications are prepared for the Remedial Action (RA). The final cleanup actions are taking between 12 and 24 months to complete on average and may cost between $1 and $10 million. After the RA is completed an additional 30 years or more of long-term monitoring and maintenance may be required. This may cost an additional $5,000-$50,000 per year.[22]

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22. All of these cost and time figures reflect the average range. Costs and time frames vary considerably depending on the conditions at a given site.

Public Participation Throughout the Superfund Process

MERLA does not place any specific requirements on the Agency regarding public participation. However, before the Agency may take major actions--such as issuing a RFRA--it must present the action before the MPCA Board in a public meeting. At this time, the public and other affected parties may ask questions and present testimony on the action. In addition to this procedure, the Agency is committed to keeping interested local officials, residents, environmental groups, RPs and the media informed about important milestones at sites and encouraging public participation in decisions made by the Agency.

Each superfund site in the state is assigned a Public Information Officer (PIO) as part of the site team. The PIO manages the public relations on the site, employing a variety of techniques to inform the public and local officials. These range from telephone calls, to more formal methods like letters, briefings, community meetings, news releases, and more formal opportunities for comment. The Agency has also released a series of "Fact Sheets" on the Superfund program and the Superfund landfill program which contain a clear overview of various aspects of the program to the public.[23]

Among the opportunities for public participation that the MPCA provides that go beyond the statutory mandates are a series of public notices and meetings at various stages of the process. The Agency has established procedures for notifying the public at sites where contaminants have exceeded the Minnesota Department of Health's maximum allowable limits, or if MDH issues a health advisory. Similarly, when the Agency proposes sites for inclusion on the NPL or on the state's PLP, it requests public comments from surrounding communities. A public meeting is held when a cleanup plan (or Record of Decision) has been developed for a given site to allow for public comment on the plan. The Agency also has procedures for notifying and explaining actions to the public when other significant points in the process have been reached.

RP Participation: Two Contributing Factors

Many factors contribute to the Agency's success in securing RP compliance. The state's strong "environmental ethic" seems to affect the State's larger corporations. The Agency's consistency of application of the program has "educated" the RPs. They

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23. Sample Fact Sheets are attached as an appendix to this chapter.

understand their responsibilities under MERLA and know that the Agency will hold them to those duties. Two additional factors which seem to contribute to the Agency's success are the low number of RPs on each site and the state's cleanup standards.

MPCA personnel stated that sites generally have fewer than five RPs and most often there is one RP who is primarily responsible for the site. This may be due in part to a 1972 ban on disposal of hazardous wastes in landfills. This ban led to the on-site disposal of most hazardous wastes, which makes identification of RPs and establishing liability a relatively simple task. Thus, as a member of the State's AG's office explained, liability is rarely a contested issue, and the state never gets involved in apportionment issues.

Cleanup Standards

The issue that often is contested is the scope of cleanup. On the one hand, Minnesota's 10(-5) risk standard as opposed to the federal starting point of 10(-6)[24] may allow for less expensive remedies, though no statistics are available to support this thesis. On the other hand, the Agency has made an effort to promulgate clear standards and methods for making the complicated site-specific decisions about cleanup levels.

MERLA does not require that specific cleanup standards be met, but the MPCA has adopted an ARARs-type system of applying various state standards. The Minnesota Health Department has set health-based Recommended Allowable Limits (RALs) for many chemicals and where these exist the remedy must achieve them. The Health Department uses whatever scientific evidence is available and, like the MPCA, uses a 10(-5) risk factor. The State has RALs for more chemicals than MCLs or MCLGs. The state also has a non-degradation policy that all remedies must satisfy. In the absence of such standards, the Agency applies a 10(-5) cancer-risk-based approach.

According to Agency officials, the RPs understand and accept these standards. To help RPs apply these standards, the Agency is developing guidance on determining site-specific groundwater cleanup goals that will be consistent with the overall state groundwater protection strategy and with EPA policies. These will be followed with similar guidelines for soil contamination.

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24. EPA has not established 10^{-6} as a firm standard, using a risk range of 10^{-4} - 10^{-7}, but the point of departure is 10^{-6}. Furthermore, Project Managers in the states and EPA regional offices informally treat 10^{-6} as the "EPA standard" absent special circumstances.

The Exceptional Cases

Every program has problematic sites, and the MPCA is no different. MPCA staff repeatedly cited two cases as representative of the worst problems--Arrowhead and Waste Disposal Engineering (WDE). In the view of State staff, the common element to both sites was EPA involvement. At WDE, when EPA became involved the negotiations ground to a halt and the RPs are now seeking a mixed funding agreement. The state feels EPA involvement slowed things down tremendously and it is refusing to sign off on the mixed funding agreement. EPA determined that the second site should be a federal fund-lead site and the MPCA staff involved were not very aggressive in following the site's progress. The RI took three years, and then a ROD was hastily written at the end of the fiscal year[25]--without an FS. The state refused to sign off on the ROD. Now, the state has the lead again and it has discovered that there are many RPs at the site, including some deep pockets.

The State attributes many of the problems it has observed at these two sites to EPA inaction. The State staff believe that EPA 'sits' on the paperwork and thus holds up action. The State also believes that it can oversee contractors more effectively than can EPA and thus get better and faster products, particularly RI/FSs. State staff point to their ability to drop contractors from the approved list and the fact that they have done so in one case as evidence of their ability to obtain better work from contractors.

VI. SPECIAL TOPICS

Municipal Landfills

The MPCA has identified municipal landfills as a key upcoming problem in their program. In 1983 the Agency began testing landfills for volatile organic compound (VOCs) contamination in surrounding ground water. The landfills tested positive almost 100% of the time. Currently, 54 of the 158 sites on the PLP are permitted landfills, and the Agency predicts this number will eventually rise to about 100.

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25. "To get a 'bean'" according to MPCA staff. No attempt has been made to verify or otherwise investigate this type of anecdotal information because its importance lies not in whether it is "true" or "false" in an absolute sense, but in the fact that the speaker believes it to be true.

Recently the legislature capped municipal liability for response actions at a given site at $400,000, not including long term maintenance and operation which the municipality will be required to fund. In the FY 88 annual report to the legislature, the Agency predicted that under such a liability cap the state-funded share of the liability for response actions at 20 municipal landfills would be nearly $100 million over the next six years. Clearly, the existing Fund cannot support such a burden. In order to secure federal funding, the Agency is trying to get as many landfills onto the NPL as possible. However, a slowdown in additions to the NPL, as well as the typically lower scores of landfills, will prevent this from solving much of the problem. Staff at the MPCA predict that the legislature will be forced to provide a new funding source to handle this problem. Since the legislature has not begun to study this problem, the nature and form of such a funding source, or even whether one will be enacted at all, is pure speculation at this time.

Voluntary Property Transfer Review Program

In response to requests from the business community, the state legislature authorized the Agency to establish a voluntary property transfer review program under the auspices of the superfund program. Begun in 1985, the program has responded to over 1000 file search requests and provided investigation and cleanup assistance at 30 sites. They plan to handle over 800 requests in FY 89 and as many as 1000 requests per year by 1991.

In 1988 the legislature authorized 6 new positions to be funded by the state Fund exclusively for the purpose of handling voluntary requests for file searches prior to property transfer in the state. The clients of the program are billed for the service in order to protect the integrity of the Fund.

VII. PROGRAM OUTLOOK

Minnesota has a mature superfund program that is making steady progress in cleaning up its known sites. The Minnesota Pollution Control Agency is making effective use of its limited resources. A number of remedial actions have been completed and the sites delisted from the State's PLP while many others are in the operation and maintenance phase. Responsible actions have been taken at approximately 2/3 of the sites on the PLP. The State has been successful in obtaining commitments from RPs to conduct the work on

the large majority of the sites. The Agency is also aggressive in pursuing cost recovery when it conducts a Fund-financed response action and has been relatively successful in recovering its costs.

One significant problem area for Minnesota is the cleanup of the many municipal landfills that are releasing hazardous substances. To date virtually every municipal landfill that the MPCA has tested appears to be releasing VOCs. One-third of the sites on the current PLP are municipal landfills and the MPCA expects the total number to double. With the recently enacted $400,000 cap on municipalities' liability for capital costs the projected cleanup costs for these sites will overwhelm the Fund. The current Fund balance could be consumed by just 3-5 such sites and the existing generator tax generates far too little money to replenish the Fund or pay for even a few such cleanups. In fact, the magnitude of the potential costs for municipal landfill cleanups is far greater than the scope of the current program. The legislature has yet to fact the issue of how to provide for these enormous costs but Agency officials hope that it will begin to consider these issues in the next biennium.

APPENDIX:

Sample Fact Sheets

Minnesota's Superfund Program

Minnesota Pollution Control Agency

Fact Sheet #1

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

The public knows it as "Superfund" — the fund and program established by the Minnesota Legislature in 1983 to address hazardous waste sites where contamination threatens the public health or the environment. The Minnesota Environmental Response and Liability Act (MERLA), Minnesota's Superfund law, gives the Minnesota Pollution Control Agency (MPCA) the authority to request responsible parties to undertake cleanup or to take action at sites where those responsible for the contamination are unknown, unable or unwilling to undertake cleanup activities.

Why was the Minnesota Superfund established?

The federal Superfund, established by Congress in 1980, provided funds to address sites where hazardous wastes posed a threat or potential threat to public health and the environment. Competition among states for those federal Superfund dollars restricted the amount that Minnesota could receive. State matching funds were also required at federally funded sites, and Minnesota had no fund specifically designated for these cleanups.

By 1983, the MPCA had discovered more than 60 locations throughout the state where cleanup was needed. At some sites drinking-water supplies had become contaminated. Often, the companies or persons responsible for the waste problems were not willing or able to clean up the sites, and the state had no funds — or authority — to undertake cleanup.

The Minnesota Legislature addressed the problem by establishing the state Superfund law. The law established the MPCA's authority to require responsible parties to undertake cleanup of sites or to use Minnesota's Superfund if responsible parties could not or would not undertake cleanup. It also provides the state with the option to recover cleanup costs later from responsible parties.

The legislature originally appropriated $5 million to support the fund. The fund is replenished by a tax on generators of hazardous wastes and by responsible party reimbursement of MPCA costs.

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How is state Superfund money used?

Minnesota Superfund money can be used only for those situations specified in the law. These include:

♦ emergency actions, such as providing alternate drinking water supplies or conducting removal of contaminants at sites which present an immediate danger to the public.

♦ state matching funds required by the federal Superfund program for cleanup actions at federally funded sites.

♦ investigation and cleanup at sites that are not eligible for federal Superfund dollars and where responsible parties are unknown, unwilling to conduct a cleanup or unable to pay for a cleanup.

♦ administration of Superfund site cleanups by MPCA staff, including discovering sites of possible contamination, identifying responsible parties, exerting authority to bring responsible parties into the cleanup process, and working with the U. S. Environmental Protection Agency, responsible parties, local governments and the public to assure prompt, effective cleanup.

How does the Superfund work?

The Superfund process begins when a site is discovered and is determined to pose a threat or potential threat to public health and the environment. A Hazard Ranking System (HRS) score is calculated for each site before it is proposed for the state Superfund list. Generally, a site with a higher HRS score is a higher cleanup priority than one with a lower score. At the same time, the MPCA staff searches for responsible parties.

Known responsible parties then receive a Commissioner's Notice stating that the MPCA intends to formally identify the responsible parties and asking such parties if they plan to negotiate an agreement. Next, a formal request for cleanup, called a Request for Response Action (RFRA) is issued by the MPCA Citizens Board.

This formal request specifies the work the MPCA deems necessary to correct the problem and sets a timetable for the work to be done. The RFRA may become the starting point for negotiations among the MPCA and responsible parties. If negotiations are successful, the MPCA and the responsible parties agree to a Consent Order, a legal agreement on what actions the responsible parties will take to clean up the site. The MPCA oversees the responsible parties' cleanup to assure that it meets state and federal standards. If negotiations are not successful, the MPCA is authorized to use state Superfund to conduct cleanup activities and attempt to recover costs later.

The 5 Superfund Cleanup Steps

The cleanup process has five steps:

Remedial Investigation (RI), a study to define the sources of contamination, the extent of the problem and the pathways of the contaminants in the soil and ground water.

Feasibility Study (FS), a study of the possible options to clean up the contamination.

Remedial Design (RD), the preparation of specific engineering or other plans to carry out the selected remedy.

Remedial Action (RA), implementing the chosen cleanup remedy.

Long Term Monitoring and Maintenance assures that the cleanup works.

How effective is the Minnesota Superfund in cleaning up hazardous waste sites?

More than 150 sites are listed on the state Permanent List of Priorities (PLP), the Superfund list of sites which are a state priority for cleanup. Forty of these sites are also listed on the National Priorities List (NPL), the federal Superfund list.

Of these, 117 are in some stage of the Superfund cleanup process. And after MPCA enforcement actions, more than 87 of 117 are being addressed by the party responsible for the release of the hazardous substance. Final cleanup actions have been completed or are ongoing at almost 40 of the 117 sites.

The Minnesota Superfund's success may be the result of the program's emphasis on responsible party cleanups. The law provides and MPCA has implemented the program with the philosophy that those responsible for contamination of a site are also responsible for cleaning it up.

Bringing responsible parties into the process has been a focus of the Minnesota Superfund program. MPCA staff estimate that more than $140 million has been spent by responsible parties on cleanup activities since the law was enacted.

What may happen to the Superfund program in the future?

The important job of addressing hazardous waste sites in Minnesota continues — MPCA staff predicts the addition of up to 50 new sites by the end of 1991.

The Superfund program will continue to emphasize responsible party cleanups and bring responsible parties into the process through negotiation or enforcement. The program may also need to focus on completing cleanups already in the five-step process instead of starting new cleanups. Landfills where contamination has been discovered will also prove to be a challenge for the Superfund program, because of limits in the law on the cost a local government must pay for cleanup.

How can I find out more about Minnesota Superfund?

The MPCA has prepared a series of fact sheets with details about various aspects of the Superfund program. A specific set has been prepared addressing landfill sites. The topics covered include:

- Superfund Program Organization
- The Superfund List and HRS Score
- Responsible Parties
- The Superfund Cleanup Process
- Community Relations
- Property Transfer Assistance
- Status of the Fund
- Glossary of Terms, Initials and Acronyms

For more information on any of these fact sheets, contact the Minnesota Pollution Control Agency at (612) 296-6300 or call toll-free at 1-800-652-9747.

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Superfund Program Organizatior

Minnesota Pollution Control Agency

Fact Sheet #2

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

How is the MPCA's Superfund Program organized?

Superfund activities are carried out by the MPCA's Division of Ground Water and Solid Waste with technical support from other divisions in the agency. Including all Superfund sites within this division allows for consistent management of sites across the program and the flexibility necessary in dealing with different types of sites.

Staff in three sections of the Ground Water and Solid Waste Division are responsible for different aspects of the Superfund Program:

◆ The Program Development Section performs preliminary assessments of hazardous waste sites, scores the sites according to the Hazard Ranking System (HRS), updates the State Superfund priorities list and assists with limited property transfer activities.

◆ The Site Response Section works with "traditional" Superfund sites, usually industrial or former dump sites where past improper handling or disposal of hazardous substances has caused soil and/or ground water contamination.

◆ The Solid Waste Section addresses soil and ground water contamination at sanitary landfills on the Superfund list.

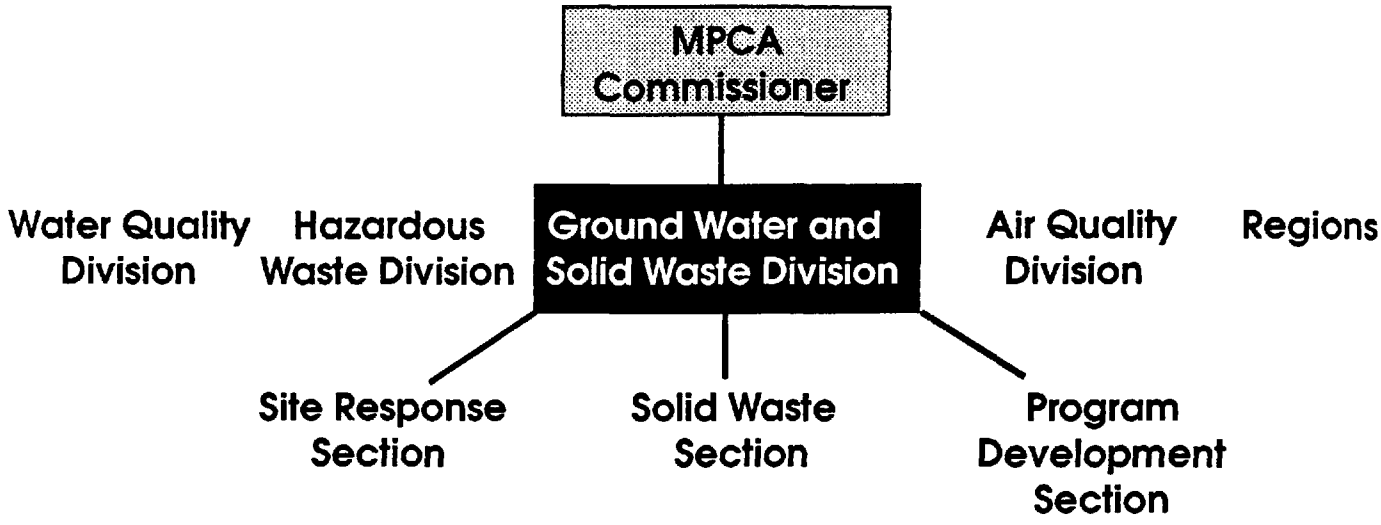
How is the Program Development Section organized?

Program Development is divided into three units — Site Assessment, Rules and Training, and Ground Water. The Site Assessment Unit is involved with Minnesota Superfund in two respects. Staff in the unit assess sites and score them according to the federal HRS.

Site Assessment also provides file evaluations for Property Transfer Assistance, a service for individuals and businesses seeking an assessment of possible hazardous waste problems on property that they are trying to buy or sell.

How is the Site Response Section organized?

Site Response is divided into three units — Responsible Par I, Responsible Party II and Superfund. The first two units generally address sites where parties responsible for the



contamination are either known or suspected. Many of the sites handled by the responsible party units are being cleaned up by the responsible parties under the direct supervision of MPCA staff. Others are undergoing cleanup as part of an investigation prior to property transfer.

The Superfund Unit generally addresses sites where the responsible parties are unknown, unable or unwilling to conduct cleanup activities. State or federal Superfund money is necessary to conduct cleanups at these sites.

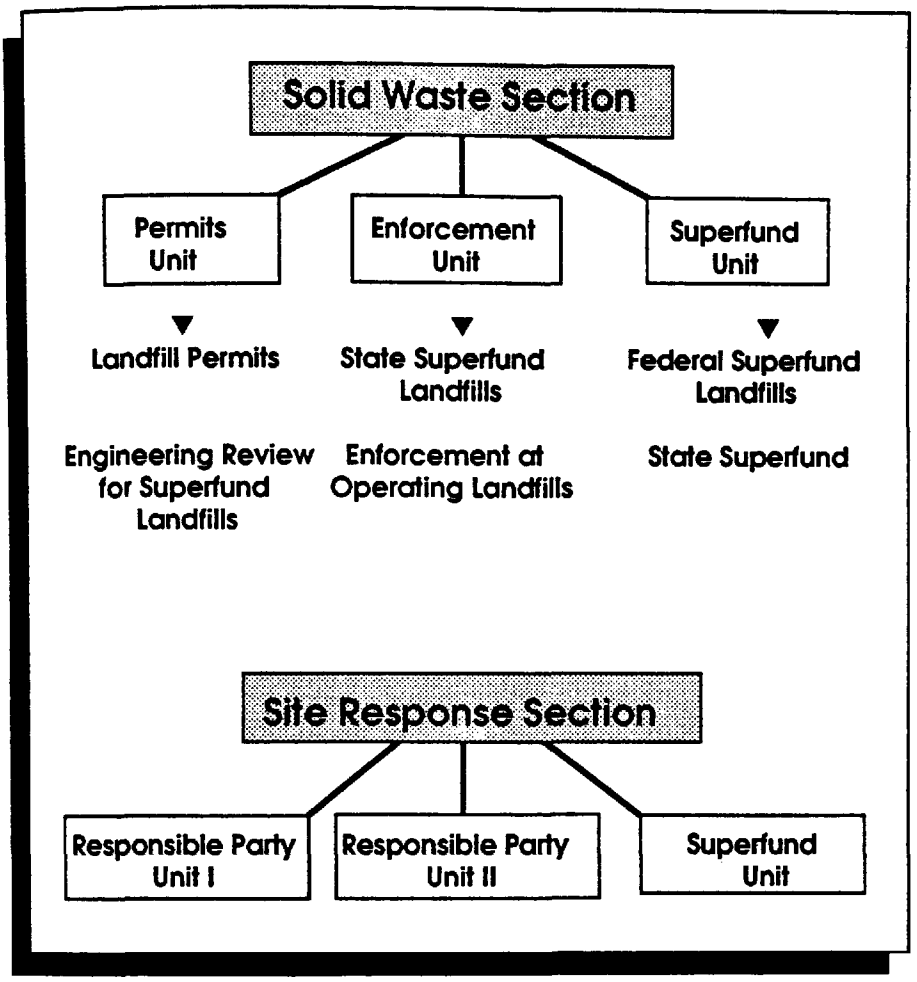
How is the Solid Waste Section organized?

Solid Waste Section is also divided into three units — Permits, Enforcement and Superfund. Sites funded by state and federal Superfund are managed within the Superfund unit, while those being conducted by responsible parties are managed by staff in both the Superfund and Enforcement Units. Parties responsible for contamination at sanitary landfills sometimes include some unit of local government which once owned or operated the landfill.

Permits Unit engineering staff generally review plans for landfill designs, expansions and closures, as well as landfill permits. In many cases, completion of the Superfund investigation and study of cleanup alternatives will be required to assure that the expansion is consistent with proposed cleanup actions. Because of this, Permits staff frequently work with Superfund issues, and they are included on Superfund project teams to review engineering plans, such as final landfill cover designs.

How are staff assigned to a Superfund site?

Once a site is placed on the Superfund list, it is assigned to a team of MPCA staff. The team approach allows staff members to concentrate on their areas of expertise. Since individual members are included on several different site teams, they can apply their knowledge of one site to address similar situations at other sites, promoting consistency in the MPCA's approach. The team approach also assures that the site cleanup will move forward even if staff changes should occur.



Any other questions on Superfund program staff?

For more information about program staff, call the MPCA at (612) 296-6300 or toll-free at 1-800-652-9747. Fact sheets like this one are also available about other aspects of Minnesota Superfund.

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Each site team consists of:

◆ the Project Manager, who serves as general coordinator, manages project budgets, ensures that schedules are met and serves as first point of contact for information on an assigned Superfund site.

◆ the Technical Analyst, usually a ground water hydrogeologist, who reviews technical ground water and soil data.

◆ the On-site Inspector, who oversees field work to ensure that it is done correctly.

◆ the Information Officer, who answers questions from the public and news media.

◆ an Attorney from the Attorney General's Office.

On federal Superfund sites, the U.S. Environmental Protection Agency may also have a team of staff working on the site.

The Superfund List and HRS Score

Minnesota Pollution Control Agency

Fact Sheet #3

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

What is the State Superfund List?

Minnesota's Superfund List, called the Permanent List of Priorities (PLP), is made up of sites throughout the state that require further investigation of contamination, as well as possible cleanup under the Superfund Program. Sites on the list are eligible for expenditure of state Superfund dollars for investigation and cleanup if no responsible parties can or will undertake necessary actions.

The PLP is updated at least once a year by formal action of the MPCA's nine-member Citizens Board, following a public comment period on the proposed changes to the list. Changes include adding new sites to the PLP, revising descriptions, making class changes and removing sites from the list. The PLP listing contains a brief description of the problems and actions taken at each site, actions needed and the Hazard Ranking System (HRS) score.

How is a site proposed for the PLP?

A site can be brought to the attention of the MPCA in a variety of ways — hot-line complaints, citizen calls, observations by MPCA staff or local government officials or information from other state agencies. Sites are also entered into the U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), a data bank of all potential or actual hazardous waste sites nationwide. Most sites then undergo a site assessment process.

There are four steps to site assessment of a potential hazardous waste site:

◆ Preliminary Assessment involves a site history and a record search for information about use of the site, known or alleged hazardous substances present, and the potential effects of the contamination on nearby populations and the environment.

◆ Screening Site Inspection includes limited testing of ground water, surface water, soil or air; a survey to document site structures, characteristics, monitoring wells, sampling locations, drums, bulk tanks,

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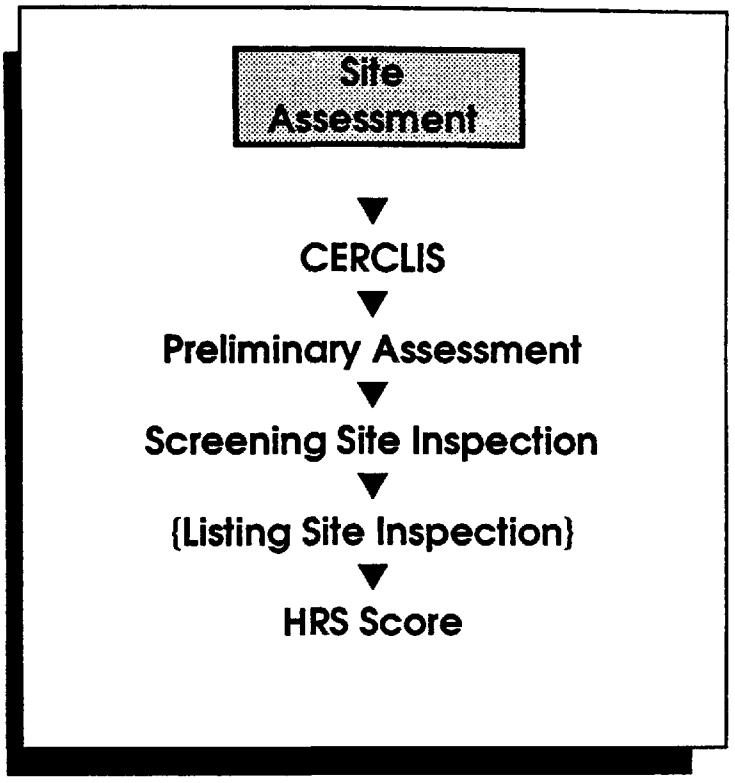
roads and boundaries; documentation of potentially affected homes, public buildings, drinking water wells or nature areas; and a review of the site owner or operator's records.

◆ Listing Site Inspection is conducted on a site that is a candidate for the EPA's priority list, the National Priorities List (NPL). More data is collected and, typically, monitoring wells are installed.

◆ Hazard Ranking System Scoring takes place if preliminary investigations verify a threat or potential threat to human health or the environment.



Although all these steps may not be taken for every site, many sites undergo this process before being placed on the PLP or NPL. During these stages, the MPCA is also performing a search for responsible parties.

What is the Hazard Ranking System (HRS) score?

The HRS score was developed for use by the EPA in the federal Superfund program. Minnesota adopted the scoring system for its Superfund list in order to be consistent with EPA's program. The score received by each site provides a relative ranking of the actual or potential risk that the site poses to public health or the environment. It is a system that the MPCA can use to compare the general risk of one site to another. This system allows the MPCA to set priorities for working on sites on the list.

The scoring system uses a mathematical model to determine the actual or potential risk. The model takes into account a number of factors, including:

◆ how hazardous the chemicals or contaminants are.

◆ whether drinking water supplies are affected or could become affected.

◆ the estimated quantity of hazardous substances present.

◆ the size of the population at risk.

◆ the potential for direct human contact.

◆ whether sensitive environmental systems, such as wetlands or endangered species, could be destroyed or adversely affected.

Using the mathematical model with these factors and several others, a score of 1 to 100 is established for each site. Generally, sites with higher degrees of risk should have higher HRS scores.

Does this system accurately indicate the risk posed by a site?

Because of some of the factors considered in computing the HRS score, it may reflect the potential risk of a site rather than the actual risk. A new scoring system is currently being developed by the EPA which may make HRS scores a more accurate reflection of actual risks from the site.

Does work begin immediately after a site is added to the PLP?

In some cases, work on the site may have begun long before the site is added to the PLP because a responsible party has been encouraged to move quickly. In other cases, a site with a low score may not be addressed until long after its initial listing because of limited MPCA staff or Superfund resources. However, because the list is updated once a year, sites are reassessed annually to assure that they will be addressed as soon as MPCA staff resources allow.

How are responsible parties informed when MPCA proposes a site for the PLP?

During the site assessment process when responsible parties are being sought, the responsible party will often be working with the MPCA to provide records or other information about the site. But formal notification at typical sites occurs when the site is proposed for the PLP. Notices of proposed additions, deletions and class changes are published in the **State Register** and a call or letter will go out to the responsible party. News releases are also sent out to assure that affected communities are aware of the proposed change.

A 30-day comment period follows, which provides the responsible party and the public with the opportunity to comment on the listing, the score or other aspects of the site description. MPCA staff addresses all comments and may make changes in response to new information received.

What about the federal Superfund list?

The National Priorities List serves the same purpose as the PLP, but is limited to sites with HRS scores of 28.5 or greater. The federal list is updated periodically and contains more than 1,100 sites.

Minnesota has 40 sites on the NPL and nominates appropriate sites whenever an update occurs. Sites are proposed in the **Federal Register** and a public comment period is held. The EPA carefully reviews the nominated sites and decides whether to include them on the list. Once Minnesota sites are on the NPL, they are eligible for federal Superfund money.

Where can I get more information about the PLP and HRS scoring?

For more information on the PLP and HRS scoring, contact the MPCA at (612) 296-6300 or call toll-free at 1-800-652-9747. Fact sheets are also available about other aspects of Minnesota Superfund.

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Responsible Parties

Minnesota Pollution Control Agency

Fact Sheet #4

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

Who can be a responsible party at a Superfund site?

The term "responsible party" refers to the person, business or unit of government responsible for the release or threatened release of a hazardous substance, pollutant or contaminant at a site. The state and federal Superfund laws specify certain activities which make a party responsible for contamination. These include:

- owners of sites where hazardous substances have been released.
- operators (or their successors) of facilities where hazardous substances have been released.
- haulers of hazardous substances who selected the facility for disposal.
- generators of hazardous substances released.
- individuals or businesses who improperly stored hazardous substances or arranged for disposal elsewhere.
- businesses which used an area for disposal of hazardous substances.

Some Superfund sites have a large number of responsible parties associated with them. At others, the responsible parties have not yet been identified.

How are responsible parties identified?

Minnesota Pollution Control Agency (MPCA) staff conduct a responsible party search by reviewing MPCA files, documents and records and interviewing people with knowledge about the site's history. Staff also request relevant information from owners, operators, transporters and others associated with the site in a letter called a Request for Information (RFI). From this information, MPCA staff make a preliminary determination about who is responsible.

Does the federal Superfund identify responsible parties in the same way?

Responsible parties under the federal Superfund program are

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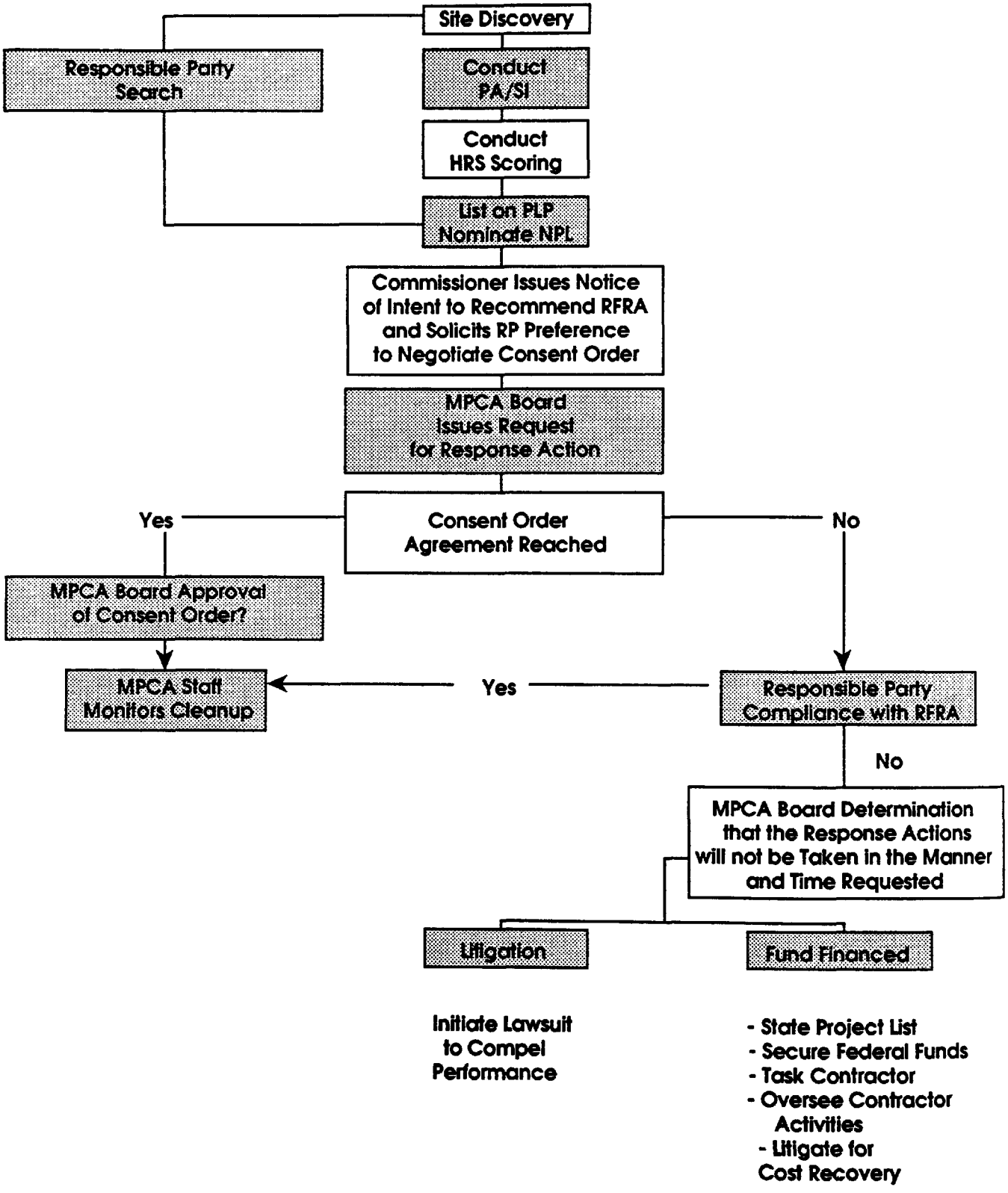
MPCA Administrative/Enforcement Process under MERLA



called potentially responsible parties (PRPs), and the EPA's method of notifying a responsible party is different from the state's. But the definitions of the types of activities which make an individual or business responsible for cleanup are similar.

What happens after staff have identified responsible parties?

Under established procedure, the MPCA staff will issue a Commissioner's Notice. This formal notice informs individuals or businesses that a recommendation will be made to the Citizens Board to name them as responsible parties. The Notice requests information on whether the responsible party intends to negotiate an agreement with the agency.

Following the Commissioner's Notice, the MPCA issues a Request for Response Action (RFRA). This is a formal action by the MPCA Citizens Board that identifies the companies, unit of government or individuals responsible for contamination at a site. The RFRA sets forth the actions that are necessary to investigate and clean up a site. It also sets a schedule for cleanup of the site.

Being issued a Commissioner's Notice does not mean that the responsible parties are avoiding their cleanup responsibilities. Often, these notices are issued even though responsible parties have already begun to investigate or clean up the site.

RFRAs are issued by the Citizens Board under authority of the state Superfund law. The Board must make five findings before issuing the RFRA: there is a facility; there is a release or threatened release into the environment; the release involves hazardous substances, pollutants or contaminants which present a danger to the public health or the environment; the release is from the facility; and the person to whom the requested response is directed is a responsible party.

What happens next?

If responsible parties are willing to conduct the cleanup — either under the Consent Order or a RFRA — the cleanup process proceeds. If responsible parties are unwilling or unable to take action, the MPCA Citizens Board can issue a determination that the responsible parties have not adequately responded in the time and manner requested by the MPCA to the RFRA.

The MPCA can then use state Superfund money to conduct the cleanup actions. Under the law, federal or state money spent on cleanups can be recovered from responsible parties through legal action. Alternately, the MPCA may decide to bring legal action against responsible parties to compel them to clean up a site.

How successful is the MPCA in working with responsible party sites?

Responsible parties are undertaking or have completed cleanups under MPCA supervision at more than 70 sites in Minnesota. Minnesota is seen as a model for other states because of its emphasis on responsible party cleanups.

How can I find out more about responsible parties under Minnesota Superfund?

For more information about responsible parties, call the MPCA at (612) 296-6300 or toll-free at 1-800-652-9747. Fact sheets are available on other aspects of Minnesota Superfund.

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The Superfund Cleanup Process

Minnesota Pollution Control Agency

Fact Sheet #5

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

How does the Superfund cleanup process work?

Once a site is added to the Superfund list, has a site team assigned, and is a priority for action there are five steps to the cleanup process. The MPCA has estimated approximately how much time each step takes and how much certain stages cost. (See diagram page two.) But it must be remembered that each site presents its own unique problems. Some require more extensive investigation, some a more expensive remedy.

Step One: The Remedial Investigation (RI)

The purpose of the RI is to study ground water, surface water, soil and/or air which may be affected by the contamination. The RI will provide MPCA staff with information about what contaminants are present and in what quantities; the extent of the contamination; how contaminants could travel off the site or affect the nearby populations or environment; what risk is posed to nearby communities from the contaminants; and how contaminants are affecting the ground water underneath the site.

The responsible party usually hires consultants to conduct the RI, with reports submitted to the MPCA for review and approval. At sites where no responsible party has been identified or responsible parties are unwilling or unable to conduct investigations, the MPCA hires consultants to conduct the RI.

Among the activities that may take place during an RI are sampling of ground water, surface water, soil or air or tests to determine whether contaminants are moving from one layer of ground water to a different ground water layer.

Often these investigations are performed over time through a phased approach. For example, a limited number of carefully placed ground water monitoring wells could be installed and sampled. Based on the data gathered, the MPCA might require installation of more

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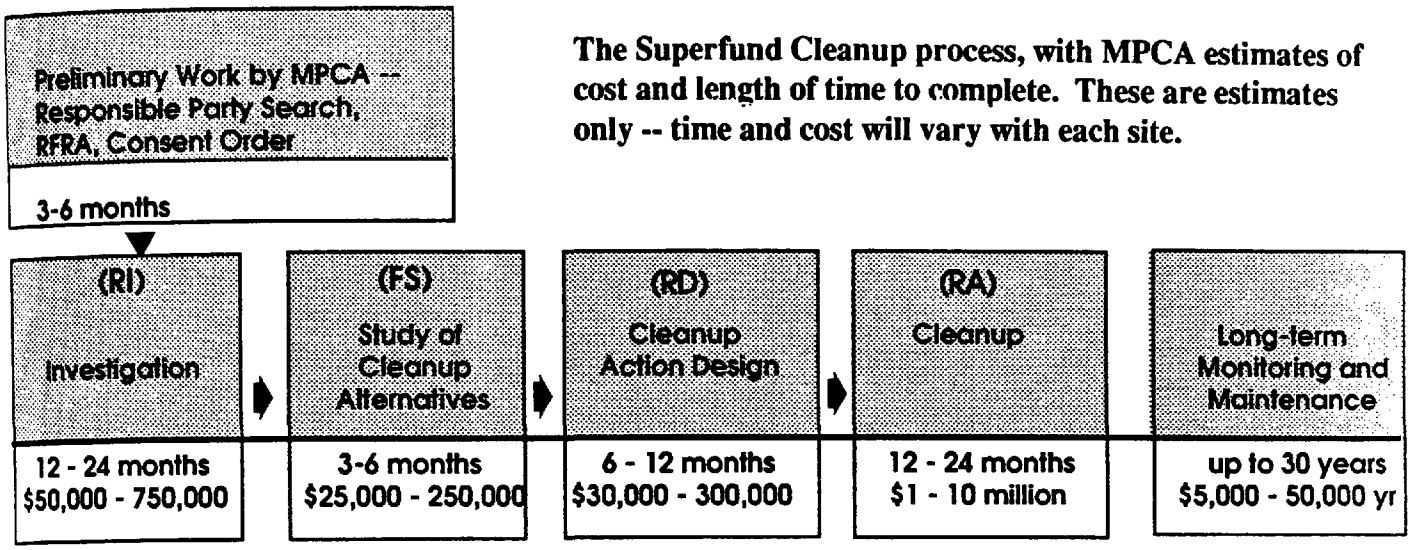

The Superfund Cleanup process, with MPCA estimates of cost and length of time to complete. These are estimates only -- time and cost will vary with each site.

wells to more accurately define the ground water movement. Another approach is to break up the site into different units — the ground water problems may be investigated first, for example, followed by an investigation of the soils.

Step Two: Feasibility Study (FS)

Based on the RI, a study of cleanup alternatives is conducted. A site may have several possible cleanup options, and the FS is designed to look at every feasible alternative.

The MPCA weighs each option, considering a number of factors including whether each alternative:

- protects public health and the environment.
- is in compliance with state and federal regulations.
- would be an effective short-term solution.
- would be an effective long-term solution.
- reduces the quantity or hazardous nature of contaminants.
- is technically feasible.
- is cost effective.
- is acceptable to the public.

After screening all the alternatives, the MPCA develops a cleanup recommendation, called a Proposed Plan. The agency presents this recommendation at a public meeting and requests comment from the involved community before completing the MPCA's final decision-making document, called the Record of Decision (ROD).

Steps Three and Four: Remedial Design (RD) and Remedial Action (RA)

After the final decision is made, specific engineering plans and specifications are prepared for the cleanup actions. This is called the Remedial Design, which must be approved before the actual construction, installation or removal of

contaminated substances (or Remedial Action) can begin.

Step Five: Long-Term Monitoring and Maintenance

After the cleanup systems are constructed, they have to be monitored and maintained for the life of the cleanup project. In some cases (a pumpout of contaminated ground water, for example) the cleanup itself may take many years. In other cases, the contamination may be addressed quickly, but monitoring of ground water may be required for many years. Each site is different, but most have monitoring and maintenance requirements to assure that the cleanup is effective over the long term.

Why does the process take so much time?

The Superfund cleanup process, which generally takes between four-and-a-half and five-and-a half years, often seems lengthy to those unfamiliar with the type of investigations conducted.

However, each site has different problems and geological characteristics, making each a unique problem for the Superfund program. Often the problem, such as ground water contamination, is underground. Thorough study is needed to determine the best remedy for the problem. It is important to make sure the investigation, feasibility study, remedial design and remedial action are done effectively the first time.

Is the process different for federal Superfund projects?

The cleanup process is the same, but the U.S. Environmental Protection Agency also reviews all of the contracts, work plans, studies and reports and must concur with the state's decisions. These additional reviews often increase the length of time for each of the steps.

Any more questions about the Superfund process?

If you have other questions about the Superfund process, call (612) 296-6300 or toll-free 1-800-652-9747. A series of fact sheets are available on other aspects of Minnesota Superfund.

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Minnesota Superfund

Community Relations

Minnesota Pollution Control Agency

Fact Sheet #6

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

How does the Superfund Program assure that communities are informed about sites?

Although Minnesota's Superfund law does not specifically address community relations, the Minnesota Pollution Control Agency (MPCA) is committed to keeping interested local officials, residents, environmental groups, responsible parties and the media informed about important milestones at sites and encouraging public participation in decisions made by the agency. In doing so, Minnesota Superfund follows the spirit of the federal Superfund law, which contains community relations provisions.

The MPCA has established procedures for notifying and explaining actions to the public when:

◆ contamination from a site or unknown source results in contamination of a private well or municipal well. The MPCA informs affected residents and local public officials if levels exceed the Minnesota Department of Health's (MDH's) allowable limts for drinking water or if MDH issues a health advisory.

◆ a site is going to be proposed for inclusion on the state Superfund list, the Permanent List of Priorities (PLP). The MPCA requests public comment after the proposal, to allow communities to discuss their ideas and concerns about the site. MPCA also works with the U.S. Environmental Protection Agency (EPA) to assure that local officials and the public are informed when sites are proposed for the National Priorities List (NPL).

◆ significant points in the Superfund process are reached. These include the beginning of investigation at the site, the results of the investigation when the extent of contamination is known and following the study of the alternative cleanup methods. When a cleanup plan is proposed, the MPCA holds a public comment period for interested residents, local officials and others to ask questions and provide comments on the plan.

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The MPCA attempts to keep local public officials informed of Superfund activities in their areas. Local officials, such as mayors, county commissioners, legislators, city councilors and other local government staff are often the persons contacted first by residents concerned about or interested in a site. Local officials also are knowledgeable about when communities are in need of more information from the MPCA.

What methods does the MPCA use to keep communities informed about Superfund sites?

MPCA staff use a variety of techniques to keep local officials and communities informed about Superfund sites. In most situations, a phone call between interested officials or residents and appropriate MPCA staff is the best way to exchange information. MPCA might also inform the public through letters to specific affected individuals, briefings with public officials, informal community meetings, fact sheets describing different steps in the cleanup process, news releases or more formal public meetings.

Are the views of the community important to decisions made about sites?

The comments of interested public officials and residents are very important to MPCA staff making decisions about Superfund sites. Community acceptance is one of the factors the MPCA uses in evaluating cleanup plans. Although it is sometimes difficult to choose a cleanup plan acceptable to all members of a community, public comment provides the MPCA with many perspectives to use in weighing one cleanup alternative against another.

Who do I call for more information?

If you have other questions about community relations in Minnesota Superfund, call the MPCA Public Information Office, (612) 296-7283, toll-free at 1-800-652-9747. In addition, fact sheets are available about other aspects of the Superfund program and about some individual sites.

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Property Transfer Assistance

Minnesota Pollution Control Agency

Fact Sheet #7

Minnesota's Superfund program addresses cleanup at a variety of sites, including industrial facilities, former dump sites, sites with municipal or private well contamination and sanitary landfills.

This series of fact sheets was developed as a general explanation of the Minnesota Superfund program. A more specific set of fact sheets addresses Superfund landfills.

What is property transfer assistance?

Property transfer assistance was created by 1988 amendments to Minnesota's Superfund law (the Minnesota Environmental Response and Liability Act or MERLA). Minnesota Statutes section 115B.17, subdivision 14 authorizes the MPCA to assist the public in determining whether a property has been the site of a release or threatened release of hazardous substances, pollutants or contaminants. The MPCA is also able to assist or supervise reasonable and necessary cleanup activities. Parties requesting assistance reimburse the MPCA for the cost of providing assistance.

Staff in two sections of the MPCA's Ground Water and Solid Waste Division are involved in providing property transfer assistance:

Staff in the Program Development Section perform file evaluations — reviews of agency records and files for evidence of contamination at or near the property.

Staff in the Site Response Section review and approve investigation plans and reports as well as cleanup plans to ensure that contaminated sites are properly investigated and cleaned up.

Why was property transfer assistance created?

Real estate transactions have consequences for property buyers, sellers, bankers, insurance companies, landlords and tenants. As state and federal environmental laws have changed, individuals and businesses have become increasingly concerned about limiting the risks involved with transfer of land which has been contaminated by a release of hazardous substances, pollutants or contaminants.

As a result, MPCA staff have been responding to a growing number of requests for file searches and for review and approval of environmental investigations and cleanup activities. In 1985, the MPCA received two requests for file evaluations; in 1986, 44 such requests were received. In 1987, after the passage of key federal Superfund legislation, the number increased to 325. During 1988, the MPCA received 964 requests for file

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evaluations. Property transfer assistance was created to provide the staff and resources to meet this need.

Is state approval required prior to property transfer?

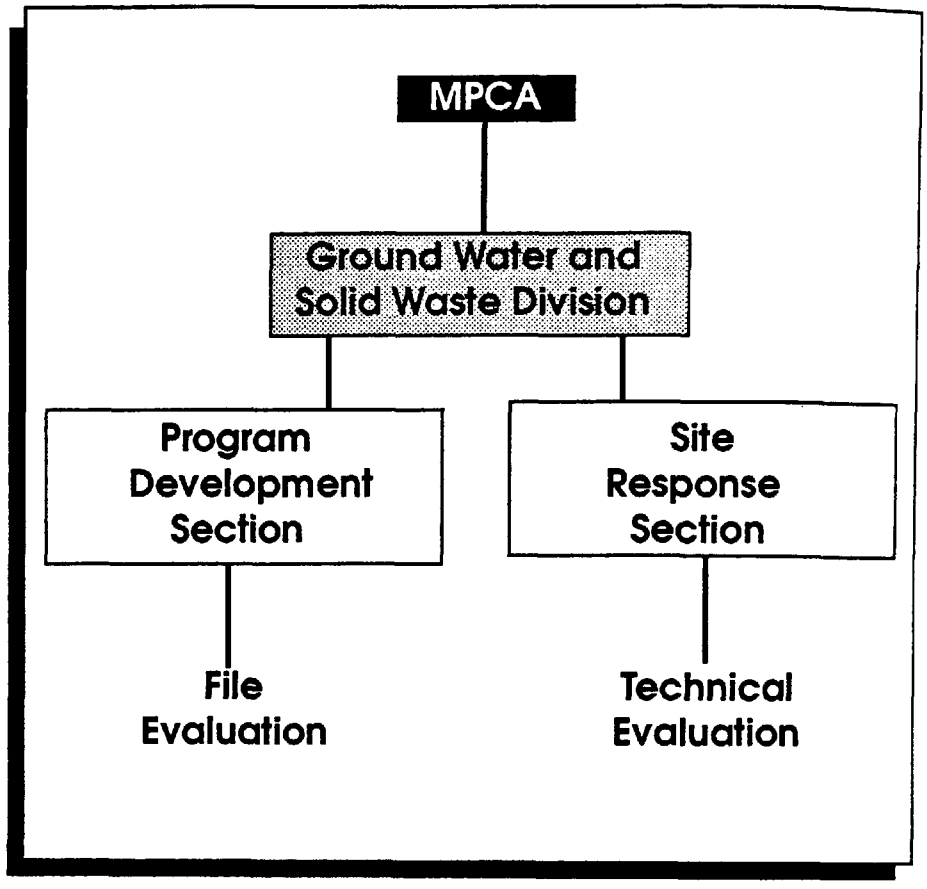
In Minnesota, approval is not required prior to property transfer. Assistance is provided upon request. Some states require written state approval and/or cleanup of contaminated property prior to a change of property ownership.

State Superfund law does require that the owner of contaminated property (or property used for hazardous waste disposal) file an affidavit with the county where the property is located prior to a transfer of ownership. State law does not require that an owner certify property to be clean prior to transfer.

How does property transfer assistance work?

The process begins with a request from an individual or business contemplating a real-estate transaction. These requests are sent to the MPCA and must include the following information:

- street address of the property;
- facility name;
- a map showing the property's location and the area within a one-mile radius of the property;
- the zip code of areas to be reviewed for leaking underground storage tanks;
- the city (if the property is within a city) or county to be reviewed for past spills; and
- (if possible) latitude and longitude or Public Land Survey coordinates for sites outside the Twin Cities metro area.



This request initiates a file evaluation, which looks at selected agency files for evidence of contamination at or around the site.

What is a file evaluation?

A routine file evaluation includes a review of the following lists, maps or data bases to identify sites at or within one mile of the property being investigated:

- National Priorities List - a national listing of hazardous waste sites which represent a significant threat to public health or the environment.

◆ Permanent List of Priorities - a state listing of verified hazardous waste sites which represent a threat to public health or the environment and are priorities for cleanup.

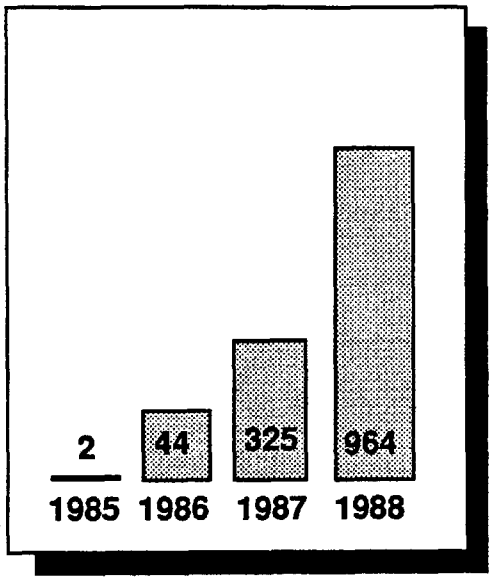
◆ Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) the U.S. Environmental Protection Agency (EPA's) data base of potential or actual hazardous waste sites nationwide.

◆ Regulatory Compliance, Hazardous Waste Enforcement Log - A listing of facilities which have had some previous problem with hazardous waste rules or regulations.

◆ List of Permitted Solid Waste Facilities - A listing of those facilities or areas in the state which have been issued permits for solid waste handling or disposal.

◆ Hazardous Waste Permit Unit Project Identification List - A listing of facilities which have received or are in the process of being issued a permit for treatment, storage or disposal of hazardous waste.

◆ 1980 Metropolitan Area Waste Disposal Site Inventory - U.S. Geological Survey topographic maps and Hudson's Street Maps which show the location of abandoned dumps, demolition sites, tree disposal sites, fly ash sites, foundry sand and slag sites, surface impoundments and other dumps. Most of these sites were discovered prior to the creation of the MPCA, and detailed information about them is generally not available.



◆ 1980 Statewide Open Dump Inventory - Lists and maps which show the location of municipal waste disposal facilities, industrial surface impoundments and closed municipal dump sites.

A file evaluation also includes a review of the Underground Storage Tank Information System data base. The review will determine whether a registered underground storage tank, leaking underground storage tank or spill of petroleum products or hazardous substance has been reported at the street address or under the facility name provided by the requester; whether leaking underground storage tanks are located within zip code areas relative to the property; and whether spills have been reported within the city or county where the property is located.

The MPCA's costs of providing assistance are paid by the individual or business requesting the service. The agency receives 75 to 100 such requests each month and can generally respond to a request within two to four weeks.

What is the next step in the property transfer assistance process?

The business or individual requesting the file evaluation may wish to evaluate the property more thoroughly. They may choose to hire a consultant to conduct a pre-purchase environmental audit. This is usually done in phases, with Phase I consisting of an extensive history and background search.

During this phase, the consultant may visit the site to look for evidence of possible contamination, look at aerial

photographs and MPCA records, and contact local officials about how the property has been used in the past.

Phase II may consist of a field investigation, which may include sampling of soils, ground water, septic systems, tanks or barrels. Initial studies may test for a variety of possible contaminants, because little may be known about what is on the site. The MPCA's Site Response staff will review work plans to assure that it addresses all potential problems on the site.

If actual contamination is discovered, the MPCA must be notified. Further specific testing may be required, followed by a "mini-cleanup" to address the contamination at the site. MPCA Site Response staff will also review and approve these mini-cleanups. If the problem is a leaking pipeline or storage tank, MPCA's Tanks and Spills Unit becomes involved in the process. The MPCA's costs of providing assistance are paid by the individual or business requesting the service.

How can I find out more about property transfers assistance?

For more information or to request a file evaluation, contact:

Property Transfer Assistance
MPCA
Ground Water and
Solid Waste Division
Program Development Section
520 Lafayette Road
St. Paul, Minnesota 55155
(612) 297-2956
toll-free 1-800-652-9747

Fact sheets are also available on other aspects of Minnesota Superfund.

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NEW HAMPSHIRE

OVERVIEW

Sites Listing New Hampshire uses three tracking lists to manage its hazardous waste sites; CERCLIS, its RCRA list, and the State groundwater protection permit list. While there may be a slight overlap between these lists, the vast majority of hazardous waste sites are found on the CERCLIS and the RCRA list.

The CERCLIS is the State's primary management and tracking tool for hazardous waste sites. All sites discovered by the State that contain hazardous substances, or are suspected of containing hazardous substances, are recorded on CERCLIS. New Hampshire's Department of Environmental Services (DES or the Department) is developing a computerized, comprehensive, project oriented waste site inventory. The development of the inventory has been hampered by the lack of adequate resources.

Until the completion of the omnibus inventory, it will be difficult to determine exactly the number of hazardous waste sites in the State, but the 148 sites recorded on CERCLIS receive primary attention of the State's Superfund program. Fifteen of these sites are listed on the NPL and one site is proposed for listing. Of the 132 sites that comprise the remainder of the CERCLIS, the State and EPA have conducted preliminary assessments on over 90% (119/132), and both preliminary assessments and site evaluations on 18% (24/132).

Enforcement Responsible parties in New Hampshire are strictly, jointly, and severally liable. The DES has a relatively free hand in choosing its enforcement strategy, and it can encourage responsible party cooperation by threatening to place liens on property to recover its cleanup costs. However, the State lacks provisions for punitive damages or civil penalties. The criminal sanctions that are at the State's disposal may not lead to effective deterrence.

Hazardous Waste Cleanup Fund New Hampshire's Hazardous Waste Cleanup Fund Law, which was passed in 1981, envisioned a Fund to be used for hazardous waste cleanup but also for related expenses of administration, a household hazardous waste program, and hazardous waste siting. The Law was amended in 1985 to provide that the Fund was not to be used for expenses at sites that qualified for the Federal program. Money for the Fund comes from hazardous waste fees, penalties, fines, bonds, appropriations, and interest, although very little money has been appropriated for the Fund and no accrued interest has ever been credited to it. The Fund had a balance of approximately $1.2 million at the end of fiscal year 1988.

In the 1988 fiscal year the DES spent $1.1 million from the HWCF, of which approximately $750,000 was spent on 8 CERCLIS sites and 1 NPL site. Most of the 1988 site-response expenditures were for removals and pre-remedial investigations. In each year since the Fund's inception, expenditures from the Fund have exceeded additions to it. In order for the DES to continue to carry out removal actions and pre-remedial activities at its current level, the Fund will need additional monies. If the hazardous waste cleanup program is to conduct remedial actions or do extensive work on non-CERCLIS, non-NPL sites, it will need substantially more funding.

The Fund's finances are complicated by its failure to collect accrued interest, by the application of monies from Federal Superfund recovery actions to the Fund, and by the deposit of some generator fees and fines into an account other than the Fund. Actions have been taken to correct these problems.

I. INTRODUCTION--PROGRAM HISTORY AND SITES

Program History

New Hampshire established its State Hazardous Waste program in 1981, and has been actively involved with the Federal Superfund program since 1983. The New Hampshire Department of Environmental Services (the DES or the Department), which is responsible for the hazardous waste program, prefers the Federal Superfund program for hazardous waste site remedial actions because the Federal program is well funded. Thus, the great majority of New Hampshire's hazardous waste cleanups are carried out pursuant to the Federal Superfund program.

The State Superfund program is focused on pre-remedial studies such as groundwater and hydrology investigations, and other pre-remedial activities such as drum removal and supplying bottled water. A household hazardous waste program and facility siting program also are managed as part of the State Superfund program.

The New Hampshire DES's Waste Management Division manages the Federal and State Superfund programs. The Waste Management Division is divided into three bureaus, which are set forth in greater detail in Section IV. Since its establishment, the Hazardous Waste program has been reorganized at least three times.

Sites

New Hampshire's hazardous waste sites can be divided into three categories: proposed and listed NPL sites; CERCLIS sites excluding NPL sites and sites proposed for NPL listing; and non-NPL, non-CERCLIS sites. This final group can be subdivided further into RCRA Subtitle C sites, including active RCRA hazardous waste sites and sites that are or were part of the RCRA Subtitle C program, but for one reason or another (e.g., bankruptcy, loss of interim status) are no longer managed as active RCRA sites and municipal landfills that are contaminated with industrial and hazardous waste.

At one time, the DES maintained a comprehensive list of hazardous and solid waste sites, but it has abandoned the practice in recent years. At present, to manage its hazardous waste sites the State maintains separate tracking systems for its RCRA sites, Superfund sites, and sites that require a State groundwater discharge permit. According to the DES, there may be a slight overlap between these site lists. The Department is

developing a comprehensive, project oriented computer database to manage its solid and hazardous waste sites.[1]

Because the DES has not yet completed its comprehensive State waste site inventory, it is difficult to determine exactly the number of hazardous waste sites in the State. Based on our discussions with State officials and written documents and reports, it appears that there may be as many as 360 sites needing remediation. There are between 150 and 180 hazardous waste sites (mostly Superfund and RCRA sites) and there may be as many as 179 non-NPL, non-CERCLIS municipal landfills that require some cleanup. According to information collected by the United States General Accounting Office (GAO) from the State of New Hampshire, the State reported that there are approximately 400 non-NPL sites "[n]eeding [a]ttention." United States General Accounting Office, Hazardous Waste Sites: State Cleanup Status and Its Implications for Federal Policy 92 (August 1989).

The Department believes that it has identified the sites with the most extensive contamination, and that these sites are being addressed by the Federal Superfund program. Nevertheless, it recognizes that other hazardous waste sites may present serious threats to the public health and welfare, and investigates all potential hazardous waste sites which are discovered. The potential health risks of such sites are reviewed by the New Hampshire Department of Public Health Services (DPHS), Environmental Health Risk Assessment Unit (EHRAU) or the appropriate Federal agency. The DES uses the health risk assessment information generated by the DPHS EHRAU or the Federal agency to help set priorities and provide risk assessment evaluations. The information also is utilized to determine whether immediate action is necessary, such as installation of water supply systems or construction of fences. The Department also recognizes that in certain instances cleanup of

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1. We were told that the transition from a "paper and pencil" system to a computer system was progressing slowly because the DES has not been provided with ample funds. The DES relies presently on the three lists described above and its institutional memory for site information.

A recent report discussing New Hampshire's hazardous waste programs noted that "[the] DES should develop a comprehensive data base of hazardous waste sites which includes the location of the site, the status of the site, state expenditures related to the site, responsible parties and the individual responsible for management oversight at the state level." Office of Legislative Budget Assistant, State of New Hampshire, State of New Hampshire Hazardous Waste Management Program 46 (June 1989) (hereinafter "Legislative Budget Assistant's Report").

hazardous waste sites that do not present serious threats to public health and welfare can be accomplished outside of the State and Federal Superfund programs.[2]

NPL Sites Although New Hampshire is a small, sparsely populated state, it has more than its proportionate share of NPL sites. In fact, New Hampshire has more NPL sites than any other New England state except Massachusetts. Legislative Budget Assistant's Report at 30. According to State officials, many of these NPL sites were created before or around the time that the RCRA Subtitle C program became effective. They are the result of illegal or marginal waste disposal practices used to avoid the substantial costs associated with properly managing hazardous wastes. As of June, 1989, New Hampshire had 15 Federal Superfund sites that were listed on the NPL and one site proposed for NPL listing. Table NH-1 contains a list of New Hampshire's NPL sites.

Our discussions with the DES revealed that as of June, 1989, the State has the lead on seven of these sites. EPA has the lead on six, and the lead for three sites remains to be determined. At four of the sites (Gilson Road, Tinkham Garage, Keefe Environmental Services and Ottati & Goss) Records of Decision have been completed. Legislative Budget Assistant's Report at 36. It is estimated that remedial actions at these sites will cost a total of $30.7 million. The average time to complete site remediation is approximately 5 years. *Id.* In general, the DES seemed fairly well apprised of the past and on-going activities at the NPL sites throughout the State.

CERCLIS Sites In addition to its 16 NPL sites, New Hampshire has 132 other hazardous substances sites that are recorded on CERCLIS. Manufacturing sites make up 37% of the 132 CERCLIS sites, illegal dumps and disposals comprise an additional 22%, and contaminated solid waste landfills and asbestos-contaminated sites make up an additional 17 and 14% respectively. The remaining 10 percent are classified by the State as "miscellaneous." *Id.* at 28.

The Legislative Budget Assistant's Report describes CERCLIS as "a management information system that tracks the status of sites that are potential candidates for the NPL." *Id.* at 39. The Department uses CERCLIS as its primary management and tracking tool for

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2. These methods include RCRA closure plans, and cleanups induced by market forces or incentives (e.g., property transfers, potential superlien liability).

TABLE NH-1

NPL SITES

Final NPL Sites:

1. Somersworth Municipal Landfill, Somersworth
2. Dover Municipal Landfill, Dover
3. Tinkham Garage Site, Londonderry
4. Auburn Road Landfill, Londonderry
5. Keefe Environmental Services, Epping
6. Ottati & Goss/Great Lakes Container Corporation Site, Kingston
7. Mottolo Pig Farm Site, Raymond
8. Gilson Road, Nashua
9. Kearsarge Metallurgical Corporation, Conway
10. Tibbetts Road, Barrington
11. Peterborough South Municipal Well Site, Peterborough
12. Coakley Landfill, North Hampton
13. Savage Municipal Well Site, Milford
14. Holton Circle, Londonderry
15. Fletcher Paint Works, Milford

Proposed NPL Site:

1. Pease AFB, Portsmouth

Source: Legislative Budget Assistant's Report at 103, 54 Fed. Reg. 29820, 29824 (July 14, 1989).

Superfund sites. It will record on CERCLIS any site at which hazardous substances are known to be present, or suspected to be present. If a site that is known to contain, or suspected of containing, hazardous substances cannot be recorded on CERCLIS, the DES will attempt to track and manage the site as a RCRA site or through a State groundwater permit.

Once a site is recorded on CERCLIS, a "preliminary assessment" is required to be conducted within one year. *Id.* at 39. The preliminary assessment is used to rank the site into one of three categories: "high priority" (likely to receive an HRS score making it eligible for the NPL), "medium priority" (having the potential to receive an HRS score making it eligible for the NPL) or "no further remedial action required." After it conducts a preliminary assessment and ranks the site, the State and/or EPA performs a site investigation for all high priority and medium priority sites. *Id.* at 38-39.

As of June 30, 1989, preliminary assessments had been completed on 119 CERCLIS sites. Of these sites, 24 had undergone both a preliminary assessment <u>and</u> site investigation and had been recommended for further action as high priority sites. Preliminary assessments only had been completed at 95 sites. Twenty-one of these sites were classified as high priority, 49 sites were classified as medium priority, and at 25 sites no further remedial action is planned. Preliminary assessments are pending for 13 sites. *Id.* at 40. The State does not maintain a comprehensive, detailed profile of CERCLIS sites in a central place as it does with NPL sites. In order to obtain detailed information about individual CERCLIS sites, each site file must be reviewed and DES personnel must be consulted.

After a site is recorded on CERCLIS, the DES pursues responsible parties to force them to clean up hazardous waste contamination. It points out to such responsible parties that it may be a benefit to undertake remediation with the State's concurrence because the only alternative remedial path involves proposing and listing the site on the NPL, which necessitates clean up under the Federal Superfund program, an extremely time consuming and costly process. In contrast, if responsible parties perform clean up before the site is ranked, it is conceivable that the preliminary assessment may place the site in "no further remedial action required" category. Once categorized, it is unlikely that the site will be

listed on the NPL.[3] To date, the Department estimates that responsible parties have spent over $20 million on pre-remedial and remedial actions at CERCLIS sites over the past 8 years.

Non-NPL, Non-CERCLIS Sites Some of New Hampshire's hazardous waste sites that are not included in CERCLIS are being tracked by the State through its RCRA list or its groundwater permit list. For example, some of the sites on the RCRA list are inactive RCRA Subtitle C sites that are managed pursuant to a closure plan, if the owner and/or operator is financially viable and cooperative. If the owner and/or operator is bankrupt or unable or unwilling to manage the site, the DES may elect to spend its State Hazardous Waste Cleanup Fund (HWCF or the Fund) monies to conduct cleanup operations at the site. In such cases, the State also will seek to list the site on CERCLIS. For example, the State committed HWCF monies to clean up and contain contamination at a former plating facility (New Hampshire Plating Company site) that had been managed under RCRA, but lost interim status. The New Hampshire Plating Company site has been added to the CERCLIS (EPA I.D. No. NHD001091453).

Sites placed on the groundwater permit list are managed by the Groundwater Protection Bureau of the DES' Water Supply and Pollution Control Division. The Groundwater Protection Bureau notifies the Waste Management Division's Pre-Remedial Section if a site is listed on the groundwater permit list. The DES also informally tracks non-NPL, non-CERCLIS municipal landfills, an undetermined number of which may require remediation at some future date.[4]

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3. Proposed revisions to the Federal hazard ranking system (HRS) will "credit" site clean up actions taken prior to the site assessment. The present HRS scores sites based on their "historical worst status," regardless of clean up efforts. The proposed revision may change the negotiating dynamic between the State and responsible parties. Pursuant to the proposed revision, responsible parties will recognize that aggressive early clean up efforts are likely to lead to a site classification of "no further remedial action required," making it very unlikely that further site remediation will be required.

4. One DES staffer stated that there are over 179 municipal landfills in New Hampshire, not listed on the NPL or recorded on CERCLIS, which may present a threat to public health and welfare.

Site Discovery New Hampshire does not affirmatively seek out new hazardous waste sites, although the Special Investigation Section of the Waste Management Compliance Bureau investigates all complaints. (See *infra* Section III.) The Special Investigation Section, largely dedicated to RCRA, also conducts follow-up inspections at RCRA facilities. Complaints or inquiries concerning real property liens that arose (or may arise) because of hazardous waste contamination at a site are potential sources of site discovery. (See N. H. Rev. Stat. §147-B: 10-b (lien provision of the State Superfund law)).

II. STATUTE

Overview

The Hazardous Waste Cleanup Fund Law (HWCF Law or the Law), set forth in N.H. Rev. Stat. Chapter 147-B (1981, amended 1983, 1985, 1986), authorizes the State's cleanup program. The DES has promulgated the HWCF rules to govern program administration. N.H. Admin. Code He-P, §1905.12 (1983, amended 1984).

A brief review of the HWCF Law and rules reveals that New Hampshire has altered the purpose and use of the Fund since its inception. For example, in 1985 the Law was amended restricting HWCF expenditures "only for those projects which do not qualify for assistance under the Comprehensive Environmental Response, Compensation[,] and Liability Act of 1980, Public Law 96-610 [sic]." N.H. Pub. L. 346 (1985). The DES believes that the intent of the law is to restrict HWCF expenditures to non-NPL sites. Apparently, the New Hampshire Legislature did not want the DES to commit HWCF monies to Federal Superfund sites, particularly for the State's 10% match in fund lead cases. Thus, any State monies expended at NPL sites must be approved by the Legislature out of general appropriations or obtained through some other financial mechanism such as a bond act.

The Legislature has structured the HWCF disbursement procedures so that the governor maintains strict control over fund expenditures. The Governor and his Executive Council must approve all expenditures of the Department.[5] The Governor and his

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5. The New Hampshire HWCF Law states merely that the Division of Waste Management must submit all contracts to the Governor and Council for advance approval, except for emergency situations. The DES indicated, however, that all prior expenditures or acceptance of money must be submitted for approval.

Executive Council also must approve the acceptance of CERCLA money from the Federal government. Two weeks (at a minimum) are required for the Governor and Executive Council to consider an expenditure or accept Federal money. The Governor's tight control over the DES' money and the time involved to obtain approval can create cash flow problems for the DES.

The rules regarding the HWCF also have been amended. Originally, the rules placed a $3,000,000 cap on the Fund. The cap was removed, however, around 1984. According to the DES, the cap was removed because the New Hampshire State legislature realized that site remediation was costly, and it wished the HWCF to stay "healthy." The cap's removal should have a positive effect on the Fund, because any amount over $3,000,000 can be used for remediation of hazardous waste sites. As explained in Section V of this report, the Fund balance has not yet reached this level.

Enforcement Authorities

Responsible parties are subject to strict, joint and several liability for cleanup costs. Cleanup costs include, but are not limited to, costs relating to the containment of hazardous wastes or hazardous materials, necessary cleanup and restoration of the site, removal of the hazardous wastes, and monitoring, assessing and evaluating the release of hazardous wastes or materials. Only three defenses to liability, required to be proven by a preponderance of the evidence, are enumerated in the HWCF Law (act of God, act of War, act or omission of a third party). These defenses closely parallel the defenses to liability in the Federal Superfund law. See CERCLA §107(b). The Law does not contain prerequisites to enforcement against responsible parties.

The Attorney General is authorized to bring cost recovery actions in Superior Court.[6] If the State spends its money to clean up a site, a first priority lien may be placed on the real property where the waste was located, on business revenues generated from that property, and on the personal property located at the facility. Additional liens, without priority, may be placed on any other property of a responsible party, including business revenues, real property and personal property. The DES feels that these lien provisions motivate private party cleanups because the potential imposition of a first priority lien can

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6. Private parties are also empowered to bring an action in Superior Court to recover costs expended to remedy environmental damage.

prevent or impede many of the financial and business transactions related to property transfers, such as the issuance of title insurance or a mortgage. The Department believes that market based incentives and disincentives such as lien provisions are an effective way of inducing private party cleanups, and it has utilized the lien provision approximately three times.

The DES is empowered with general hazardous waste administrative authorities that are similar to RCRA authorities. Thus, it can issue remedial action orders, contract for the cleanup of a spill or request the Attorney General to bring a civil action upon receipt of information that the generation, storage, disposal or treatment of any waste may present an imminent and substantial hazard. The Attorney General may serve written demands for information and may subpoena witnesses and documents, the DES may obtain site access, and injunctive relief is available to enforce the HWCF Law and its rules. The DES maintains that the Law empowers it to order the operator of a hazardous waste facility or the custodian of the waste to clean up a site, and obtain an injunction against such parties.

New Hampshire's Law contains no provisions for collection of punitive damages or assessment of civil penalties. Criminal penalties of up to $100.00 per day may be assessed against any hazardous waste generator who does not pay his quarterly hazardous waste generator fee or knowingly gives or causes to be given any false information in reports, records or other documents. Any penalties collected shall be deposited in the HWCF. A generator convicted under this provision is guilty of a misdemeanor. The low criminal penalty and minor nature of the violation are unlikely to have a significant deterrent effect on responsible parties. In fact, the Attorney General may decide not to bring such an action if he determines that the cost of bringing the action is much greater than the potentially small fine collection and the limited deterrence value.

Enforcement of the HWCF Law would be greatly enhanced if the State were able to assess civil penalties and sue for punitive damages. From the State's perspective, civil sanctions have a less burdensome standard of proof than criminal sanctions, and probably require less case preparation than criminal actions. Imposition of substantial civil penalties and punitive damages can have a powerful deterrent effect on the regulated community.

Any person who violates any of the provisions of the hazardous waste laws, makes a materially false statement in any document, tampers with a monitoring device or does not comply with a monitoring method, or violates a term or condition of an order or permit

shall be guilty of a class B felony and may be imprisoned or fined not more than $50,000. Any fines collected shall be deposited into the HWCF. This provision is more powerful than the misdemeanor provision.

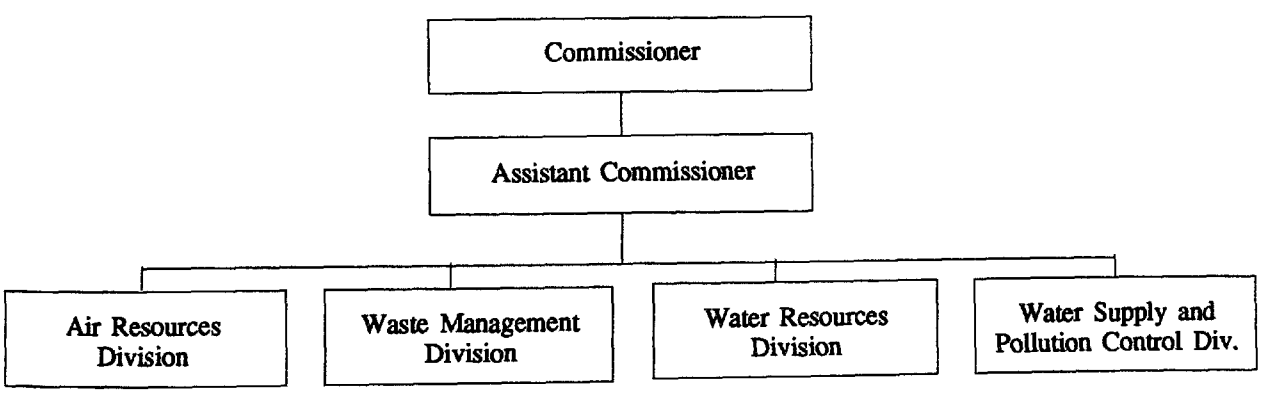
It is not known under what circumstances the State uses these criminal sanctions. According to the Revised New Hampshire Hazardous Waste Cleanup Fund Annual Report (Fiscal year 1988), the State collected $212,478.71 in fines and penalties that were added to the HWCF.

III. ORGANIZATION

The DES, which is divided into four program divisions, is responsible for New Hampshire's Superfund program. Figure NH-1 illustrates the structure of the DES.

FIGURE NH-1

STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES



The Waste Management Division, which is responsible for RCRA, Federal and State Superfund and New Hampshire's other state solid and hazardous waste programs, is divided into three bureaus: the Waste Management Compliance Bureau, the Waste Management Planning Bureau and the Waste Management Engineering Bureau. Each Bureau contains three sections. The organization of the Waste Management Division is depicted in Figure NH-2.

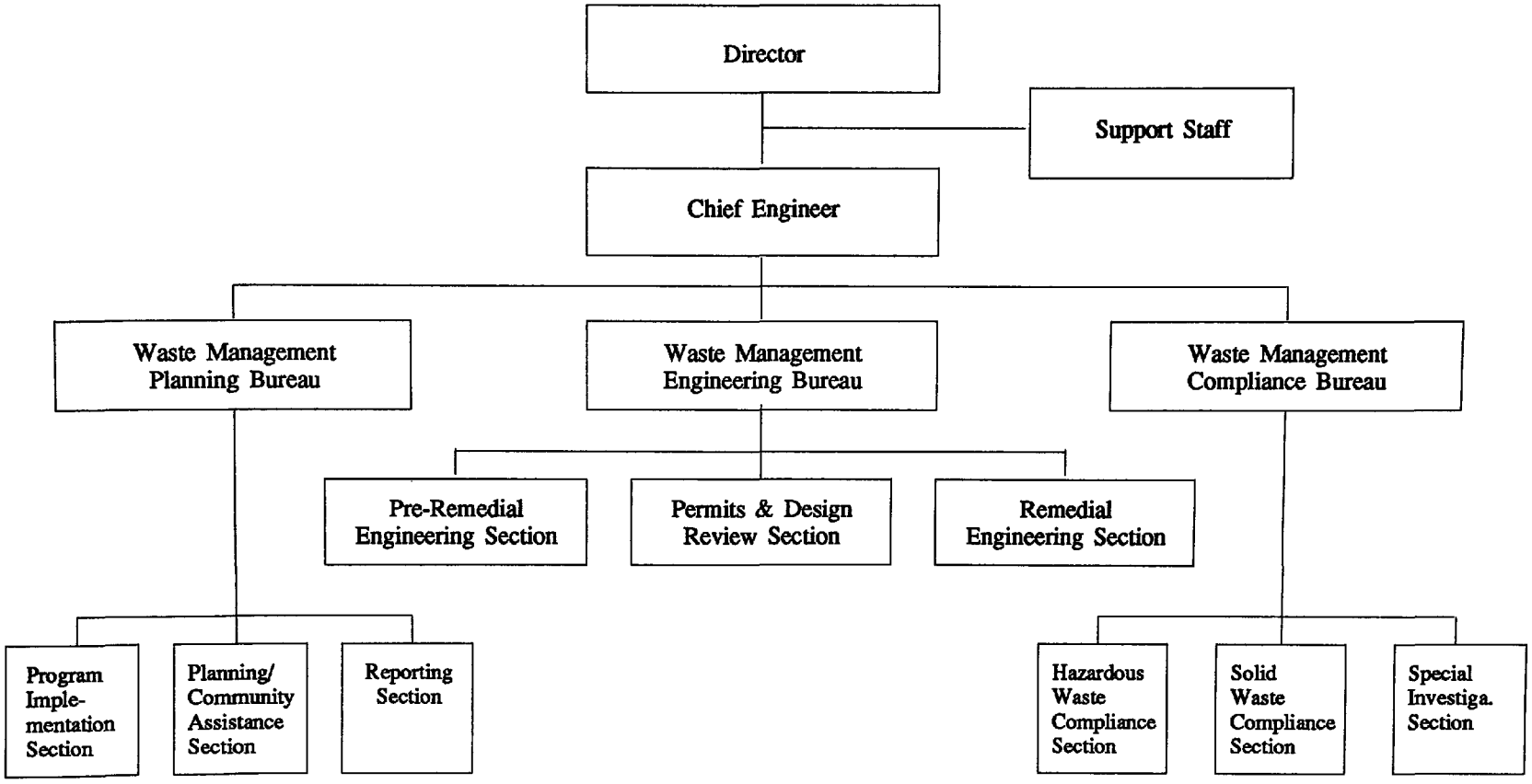
The Waste Management Compliance Bureau has three sections that administer various portions of the RCRA program. The Waste Management Planning Bureau also is largely dedicated to RCRA. For example, it contains a Reporting Section that is responsible for the RCRA manifest system. The Reporting Section controls the management of RCRA information, and prepares reports to the EPA and the State. It is responsible for developing the Waste Management Site Inventory that will include all RCRA, CERCLIS and other hazardous waste sites.

The Waste Management Engineering Bureau, covering mostly Superfund, also contains three sections. The Pre-Remedial Engineering Section is geared toward pre-remedial activities at State and Federal Superfund sites, described by the DES as all activities through the hazard ranking of the site. Almost all of its positions are funded by the Multisite Cooperative Grant entered into between the State and the Federal government. The Remedial Engineering Section consists of RPMs involved with New Hampshire's NPL sites. The Permits and Design Review Section provides engineering support for RCRA and Superfund projects in all three Bureaus. The majority of its time is devoted to the permitting and design review of solid waste facilities. If a RCRA facility application is received, Section personnel devote to it whatever time is required to review the application thoroughly. Very little time of the Permits and Review Section (less than 10%) is spent on Superfund matters.

One other bureau, the Groundwater Protection Bureau, is involved in Superfund activities. It conducts hydrogeological studies and other investigations at hazardous waste sites. Commonly referred to by the DES as the "hydro team," it is actually part of the Water Supply and Pollution Control Division, not the Waste Management Division.

FIGURE NH-2

WASTE MANAGEMENT DIVISION



The present structure of the Waste Management Division is heavily oriented toward the RCRA program. More than two-thirds of all staff seem to be involved with RCRA matters; only 2 of 10 sections are dedicated to the Federal and State Superfund programs, and 2 other sections partially participate in these programs.[7] It is difficult to assess the degree of communication and coordination between the Bureaus and Sections in the Waste Management Division, but based on our discussions with DES staffers, it is clear that not all personnel are aware of the activities outside their Sections. Not surprisingly, the extent of knowledge seemed to be proportional to the amount of time employed by the DES. It is also unclear exactly how the hydro team fits into the activities of the Waste Management Division, although the Waste Management Division and the hydro team collaborate on many projects. In fact, the Division Director of the Waste Management Division and the hydro team's supervisor set priorities for the hydro team.

The Environmental Protection Division of the New Hampshire Department of Justice (formerly known as the Office of the Attorney General) consists of 8 attorneys and provides the DES with legal support. It is compensated for some of its services through the HWCF. Six of the attorneys in the Environmental Protection Division devote between one-third and one-quarter of their time to issues regarding hazardous waste (Federal Superfund, HWCF and RCRA issues). In Fiscal year 1988 the Attorney General's Office charged the HWCF $85,748 for the services rendered by one attorney, one investigator, one paralegal and one secretary.

IV. FUNDING

The HWCF is a nonlapsing revolving fund that was created to provide for adequate and safe containment and cleanup of hazardous wastes and hazardous materials within the State. As noted above, the New Hampshire Legislature has altered the potential uses of the HWCF significantly during the Fund's eight year existence. At present, the New Hampshire HWCF Law states that the monies expended from the HWCF shall be used only for those projects that do not qualify for assistance under the Federal Superfund law. All fund expenditures must be certified by the Governor and his Executive Council. As of

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7. This figure includes the nine sections in the Waste Management Division and one section (the hydro team) of the Water Supply and Pollution Control Division.

June 30, 1989, the HWCF had an available balance of $1,891,073. Legislative Budget Assistant's Report at 43.

Sources

New Hampshire's HWCF Law lists several sources of fund monies. They are:

- quarterly hazardous waste generator fees;
- quarterly fees imposed upon hazardous waste treatment, storage and disposal facilities (only on hazardous waste from out-of-state sources);
- penalties and fines;
- hazardous material transporter permit fees; and
- interest on the HWCF.

The Legislature has appropriated very little money for the HWCF. As the following chart indicates, the average amount approximated per year over the last eight years is $78,000.

Year	Amount Appropriated
1981	$200,000
1982	$ 60,000
1983	$ 62,000
1984	$100,000[8]
1985	$100,000[9]
1986	$0
1987	$0
1988	$100,000[9]
TOTAL	**$622,000**

According to the Revised Annual Report for the Hazardous Waste Cleanup Fund (Fiscal year 1988), the HWCF's balance at the end of fiscal year 1988 was $1,226,419.59.

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8. These figures represent approximate appropriated amounts.

During the 1988 fiscal year, the Fund spent $1,118,672.82, and was replenished from the following sources:

- $212,478.71 from criminal fines and penalties for violations of the State's Hazardous Waste Laws (27% in fiscal year 1988);
- $357,504.38 from quarterly fees paid by hazardous waste generators and facilities that treat, store or dispose of hazardous waste from out of state (45% in fiscal year 1988); and
- $219,851.25 from hazardous materials transporter permits (28% in fiscal year 1988);

The total amount collected was $789,834.34. In 1988, the Fund was replenished for only a portion of its expenditures. According to the DES, since the Fund's inception this has been the rule rather than the exception.

The DES told us that it does not expect to collect more than $800,000 in any year. Far less has been collected in previous years. The Legislative Budget Assistant's Report bears this out. It notes, for example, that in fiscal years 1986 and 1987 only $4,720 and $533,104 were collected, although $358,435 and $319,466 were spent, respectively. Legislative Budget Assistant's Report at 43.

The Legislative Budget Assistant's Report contains a chart that details HWCF revenues, expenditures and balances from 1981 through 1989. The chart shown in Table NH-2. Without exception, for every fiscal year from 1982 to 1988, HWCF expenditures have exceeded HWCF revenues.[9] During these six years, at a minimum, Fund expenditures were double the Fund revenues. In one year (fiscal year 1986) Fund expenditures were 75 times Fund revenues. Assuming that New Hampshire has between 150 and 180 hazardous waste sites (not including non-NPL, non-CERCLIS municipal landfills) it appears that the HWCF as currently structured, will be inadequate to pay for the hazardous

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9. Fiscal years 1981 and 1989 are exceptions. In fiscal year 1981, there were no Fund expenditures or revenues. In 1989, the Fund revenues jumped to $2,200,059. A large portion of this sum (approximately $1,800,000) is attributable to a Federal Superfund cost recovery award that may have been incorrectly credited to the HWCF. See Legislative Budget Assistant's Report at 44.

TABLE NH-2

STATE OF NEW HAMPSHIRE
HAZARDOUS WASTE CLEANUP FUND
SELECTED FINANCIAL INFORMATION

Fiscal Year	Revenue	Expenditures	Available Balance
1981	$ -0-	$ -0-	$ 200,000
1982	59,187	117,989	165,492
1983	248,354	245,364	111,390
1984	210,529	433,435	917,426
1985	357,472	1,006,539	2,712,922
1986	4,720	358,435	855,320
1987	533,104	319,446	818,789
1988	789,834	1,118,673	678,376
1989	2,200,059	1,470,550	1,891,073
TOTALS	**$4,403,259**	**$5,070,431**	**$ N/A**

Reprinted from the Legislative Budget Assistant's Report at 43.

waste planning, implementation and management activities for which the State is responsible without substantial appropriations from the Legislature or other additional sources of funding.

HWCF Funding Issues

The Legislative Budget Assistant's Report uncovered three significant funding issues related to the HWCF. These anomalies point out that the DES has not exercised careful control over the HWCF. They make it difficult to determine the funds available for the remediation of hazardous waste sites.

First, the Report notes that the Waste Management Division "deposited nearly [$1,800,000] in recoveries from Superfund enforcement actions into the [HWCF] during fiscal years 1989 and 1988. ...The practice of depositing [Federal] Superfund recoveries in their entirety to the [HWCF] is questioned because it is inconsistent with the established intent and purpose of the [HWCF], which restricts the use of the fund to nonqualifying CERCLA sites." The Report recommends depositing this money in the general fund. Legislative Budget Assistant's Report at 44. If the Legislature agrees with this reasoning, the HWCF could lose this significant amount of money.[10]

Second, it points out that during Fiscal year 1986, the DES deposited $730,035 (collections of generator fees and fines) in an account belonging to the Division of Public Health, Waste Management Engineering Bureau. The Report recommends that the Waste Management Engineering Bureau account should be analyzed to "determine if an adjustment should be made to correct the [HWCF for the] balance due ..." *Id.* at 45.[11]

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10. According to the DES, the Legislature has reviewed the Legislative Budget Assistant's Report and has not acted to remove the Federal Superfund money from the HWCF.

11. The DES responded to this recommendation as follows:

> "The second observation regarding the [HWCF] deals with income that was deposited in the Waste Management Engineering Bureau, account 010-044-5495. ... To the best of our knowledge, these funds were used for activities permitted under [the Hazardous Waste Cleanup Fund Law]."

Legislative Budget Assistant's Report at 159 (response of the DES to the Report).

Third, the Report discusses interest accruals on the HWCF. Surprisingly, as of February, 1989, the HWCF never has been credited for interest income earned. The Report estimates that over the eight year period that the Fund has existed, approximately $591,579 in interest income would have accrued on its average balance, and recommends that "[t]he Waste Management Division should request the State Treasurer to transfer accrued interest income earned ... and establish procedures so that the [HWCF] is credited for all future accrued interest income in accordance with [N.H. Stat. §147-B:3]." *Id.* at 45-46. On June 29, 1989, the DES made the recommended request. *Id.* at 159.

Bond Issues

As stated above, in 1983 the State Legislature passed a $1.5 million bond issue to provide funds for the HWCF. The legislation that contained the bonding authority declared that the interest and principal due on the bonds shall be a charge against the HWCF, even though N.H. Stat. §147-B: 6 (V) states "[n]otwithstanding any other provision of law, the interest and principal due on bonds and notes shall not be paid out of funds from the [HWCF]." According to the DES, the HWCF has not been debited for such charges. The Legislative Budget Assistant's office told us that the bond will be repaid from the State's general fund. Obviously, if bond principal and interest were debited from the HWCF, less money would be available for hazardous waste cleanup.

The Legislature has passed at least one additional bonding act of $1,500,000 to provide for the State's 10% matching share at Federal fund lead NPL sites, and for other activities at NPL sites.

Uses of the Fund

The New Hampshire HWCF Law states that Fund monies can be used for:

- safe containment and cleanup of nonqualifying CERCLA sites within New Hampshire;
- household hazardous waste cleanup projects;
- hiring consultants and personnel;
- purchasing and renting equipment;

- administrative costs associated to the Fund; and
- "other necessary expenses" directly associated with hazardous waste cleanup and containment.

The law also requires the DES to allocate $60,000 annually from the HWCF for the development and implementation of a hazardous waste siting program.

Based on the provisions of the HWCF law, it is clear that the legislature did not intend that New Hampshire's HWCF be used solely to cleanup hazardous waste sites. In fact, the legislature specifically reserved $60,000 of HWCF money per year for a siting program, and authorized the DES to use the Fund for expenses "associated" with Fund administration, a general directive that the DES interprets broadly.

Information is not available to examine in detail how New Hampshire has used its Fund from 1981 to the present, although information for at least one year (1988) is available for analysis. In fiscal year 1988, New Hampshire's HWCF was used for five major purposes.[12] The chart below sets forth expenditures from the Fund.

Reason for Expenditure	Amount	Percent of Total Expenditure
Fund Administration	$119,247.80	10.7%
Household Hazardous Waste Program	$ 63,136.19	5.6%
Facility Siting Program	$ 31,505.66[13]	2.8%
Site Response & Cleanup	$819,035.17	73.2%
Payment to Attorney General	$ 85,748.00[14]	7.7%
TOTAL	**$1,118,672.82**	**100%**

12. Department of Environmental Services, Revised Annual Report for the Hazardous Waste Cleanup Fund (Fiscal year 1988).

13. Although the HWCF Law specifically requires that $60,000 per year be allocated to facility siting, the State spent only half that amount in fiscal year 1988 because, according to the DES, the facility siting staff position was vacant.

14. See *supra*, p. 112.

The siting response and cleanup expenditures were spent for the following purposes:

Reason for Expenditure	Amount
Supply bottled drinking water (Tibbets Road Site)	$ 3,771.75
Cleanup and containment of hazardous materials (New Hampshire Plating Site)	$207,542.34
Drum removal (Roger's Trailer Park Site)	$ 26,064.00
Hydrogeological and pre-remedial investigations of suspected hazardous waste sites:	$520,501.95

1.	New Hampshire Plating	5.	Tappan Waste
2.	Naughton Landfill	6.	Garabedian Landfill
3.	Hall Street	7.	Duston Road
4.	Ruggerio Pig Farm		

TOTAL	**$757,880.04**[15]

Based on this information, we can observe several interesting facts about the HWCF monies expended on site response and remediation.

During fiscal year 1988, New Hampshire spent approximately $750,000 of HWCF monies on 8 sites all of which are recorded on CERCLIS.[16] The State HWCF expenditures averaged approximately $94,000 per site. At two of these sites (Roger's Trailer Park and New Hampshire Plating Company), approximately $250,000 of the Fund was spent directly on removal activities. The remaining money, over $500,000, was spent on six sites to carry out pre-remedial and hydrogeological investigations. Some of this money may have been used to pay the DES's hydro team salaries and expenses to prepare such reports and studies. The Revised Annual Report is unclear with regard to exactly how this money was

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15. There is a discrepancy of $61,155.13 between the $819,635.17 that the Revised Annual Report lists on page 5 as the aggregate figure spent on site response and cleanup, and the breakdown of this figure on pages 3 and 4 of the Report. The DES did not explain to us the reason that these figures vary.

16. It also spent approximately $3,800 to provide bottled water to residents of a town near the Tibbets Road NPL site.

spent. It is clear, however, that these HWCF monies were used largely for removal activities and pre-remedial investigations. Thus, in fiscal year 1988 no HWCF monies were expended for remedial work.

Assuming that New Hampshire continues to use its HWCF only for the limited purposes of conducting pre-remedial investigations and removals at CERCLIS sites, and assuming that at each site such investigations and removals are not less than $94,000 per site, the State would be required to expend over $10,058,000 ($94,000 x 107 sites [132 CERCLIS sites - 25 CERCLIS sites at which no further action is required]). Assuming that the percentage of the HWCF used for "site remediation and response" is equal to the Fiscal year 1988 amount (73%) and remains constant, the Fund will require approximately $13,778,000 ($10,058,000/73% = x/100%). If the DES can address all of its sites within 10 years, the HWCF will require at least $1,337,800 per year.

In order to accumulate $1,337,800 per year, the HWCF will require additional sources of funding. Appropriations have averaged only $78,000 per year, and collection of money from other sources such as fines and penalties are unlikely to exceed $800,000. Collecting accrued interest on the Fund is not likely to generate more than $83,000 per year.[17] Although the HWCF may accrue some monies from settlement and/or recovery, the DES told us that such monies are dedicated to cleanup activities at specific sites. In fiscal year 1988, DES received approximately $1,700,000 in settlement monies (see Section V, The Remediation Process), but this magnitude of recovery is unlikely to be repeated. Based on these amounts, the Fund will receive not more than $960,000 per year. Thus an additional $390,000 will be required in order for the DES to conduct pre-remedial and removal activities at CERCLIS sites.

If the DES expands its scope of activities to include remedial work, or additional CERCLIS sites are discovered, substantially more Fund money would be required. The DES's future plans regarding these matters are unknown.

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17. Based on the chart found on page 45 of the Legislative Budget Assistant's Report, we can assume an average fund balance of approximately $1,000,000 and an average 90-day T-bill rate of 8.3%, which yields $83,000 per year.

V. THE REMEDIATION PROCESS

Prioritization and Site Listing

Because the DES does not maintain a comprehensive site inventory, it is not possible to determine exactly how sites are prioritized. The DES stated that at present State Superfund sites are roughly prioritized based on three factors:

- whether the site poses a health hazard;
- whether the health hazard at the site can be remediated with the HWCF monies available; and
- whether action taken at the site is likely to encourage the Federal EPA to move the site to the NPL.

An informal committee made up of the Director of the Waste Management Division, its Chief Engineer, and others discuss the sites and prioritize them. Each year, two or three of the prioritized sites may receive attention. Sites are reprioritized every year.

As set forth above, when a new site is discovered, the DES lists a site on CERCLIS if hazardous substances are found at the site or the Department suspects that hazardous substances are located at the site. If responsible parties can be located, the DES will attempt to negotiate a settlement to clean up the site. If a viable responsible party cannot be located, or responsible parties are unwilling to enter into negotiations, the DES may access its HWCF to conduct pre-remedial studies or a removal at the site. In deciding whether to commit the HWCF monies to a site, the DES appears to review the same factors discussed above: the potential health hazard; whether the hazard can be addressed given the HWCF monies available; and whether pre-remedial studies will encourage the Federal EPA to move the site to the NPL. In fact, hydro team studies are sometimes used to raise a site's visibility or confirm its potential health hazard so that the Federal EPA will be provoked to act. Public notoriety of the site may affect decision-making.

Site Remediation, Emergency Response and Cost Recovery

The New Hampshire State Superfund program is focused on removal actions and pre-remedial investigations. The State has taken the lead on 7 NPL sites, however, so the State program is not entirely pre-remedial in focus. The HWCF appears to be used almost exclusively for pre-remedial activities. A detailed description of these activities in set forth in Section IV of this Report.

Last year the DES received $1,734,288 in settlement monies at NPL and CERCLIS sites. The chart below sets forth the amounts received by site.

Site	NPL or CERCLIS Site	Amount
Dover Landfill	NPL	$ 73,349
Gilson Road and Tinkham Garage	NPL	$1,315,086
Nashua Riverside Landfill and Hudson Asbestos Area	CERCLIS	$ 345,853

According to the Legislative Budget Assistant's Report, the State has spent $76,304 at the Dover Landfill site, and the Federal government spent $859,239. Legislative Budget Assistant's Report at 34. At the Gilson Road and Tinkham Garage sites, the State has spent $1,209,252 and the Federal government has spent over $18,000,000. *Id.* It is not known how much money the State expended at the two CERCLIS sites. No information was available regarding other settlements or recoveries at CERCLIS sites or other hazardous waste sites.

Cleanup Standards

In most cases, the DES claimed that site cleanup standards (ARARs) meet or exceed the Federal standards. The DES pointed to New Hampshire NPL Records of Decision to document this claim.

Public Participation

The DES hired a summer intern to harmonize its State public participation procedures with the Federal procedures. The intern interviewed EPA personnel and reviewed the Federal guidelines. The DES may hire a community relations coordinator in the future. At present, the RPMs are responsible for public relations at each of their sites. On NPL sites, the Federal procedures are followed. At non-NPL sites, public relations are geared to the amount of interest displayed. There are no required formal procedures for non-NPL sites. Generally, a press release and fact sheet are prepared for each site.

According to the Department, it has held numerous public meetings and maintains an active public information program for all State and Federal Superfund activities, especially for areas studied by the hydro team.

The DES feels that the State has certain advantages over the Federal government in community relations matters. The State is closer to the affected community, can contact local officials and activists directly, and visit sites more frequently.

VI. PROGRAM OUTLOOK

Because New Hampshire has not yet completed its comprehensive waste sites inventory, and because the HWCF has not been carefully managed, it is difficult to assess the first 8 years of the New Hampshire Superfund program. Nevertheless, certain key facts have emerged that characterize the program and are likely to affect its future.

Monies from the HWCF have been expended for a variety of purposes. In Fiscal Year 1988, the HWCF was used to fund a household hazardous waste program, study facility siting, pay the New Hampshire Attorney General for services rendered, pay administrative costs associated with Fund administration, and conduct pre-remedial investigations and removal actions. The program has focused for the most part on removals and pre-remedial activities such as studies and investigations. Approximately 73% of HWCF monies supported pre-remedial investigations and removal actions.

It does not appear that any State HWCF monies have been used for remedial work. In fact, the State Legislature has explicitly prohibited the DES from using the HWCF on projects that qualify for Federal Superfund assistance. Thus, in addition to its other uses, it

is likely that the HWCF will continue to be used to support pre-remedial activities, mainly at CERCLIS sites.

Even if it is used only for pre-remedial activities, the HWCF probably will not be adequate to address the sites that are presently on the CERCLIS because the financial sources that support the fund (e.g., legislative appropriations, accrued interest and fines and penalties) are unable to generate ample income to cover yearly expenses. For example, in fiscal year 1988 the HWCF took in only 70% of what it spent. According to the DES, the amount collected from fines and penalties in fiscal year 1988 was the maximum amount that the Department feels it can collect in any year. Moreover, the DES does not feel that monies collected through settlement and cost recovery will significantly contribute to the HWCF, in spite of the large settlement award received during Fiscal Year 1988. Additional sources of funding will be needed if the DES is to continue to carry out its current level of pre-remedial and removal activities.

It is not clear whether the New Hampshire Legislature will contribute substantial amounts to the HWCF. The Legislature can act by appropriating money from the general fund, passing a bond act or using some other financial mechanism. To date the Legislature has been reluctant to add more than a minimal amount of money to the Fund (average of $78,000 per year over the past eight years). Without additional monies from the Legislature, or an increase in the monies collected through fines, penalties, hazardous waste fees and settlement/cost recovery, the HWCF may not be able to continue to support fully the pre-remedial activities of the DES. Legislative aid for the HWCF will probably compete with the allocation of money for the State's 10% match at fund lead Federal Superfund sites and other environmental programs.

Based on the information set forth in the Legislature Budget Assistant's Report, it is clear that the DES should exercise more careful control over the HWCF. It must collect accrued interest and properly credit the Fund for penalties, fines and fees collected. Additionally, the State must determine whether its cost recoveries from Federal Superfund sites at which no HWCF monies have been expended should be credited to the Fund.

The enforcement authorities in the state HWCF Law should provide the State with effective negotiating clout and litigation muscle. Enforcement efforts might be enhanced if the State empowered DES to collect civil penalties and punitive damages. At present, the

HWCF law only contains provisions for criminal penalties. It may be difficult for the State to bring a criminal action against responsible parties.

Once the DES completes its comprehensive waste sites inventory and implements careful cost accounting over the Fund, it will be in a better position to determine precisely the amounts needed for site cleanup and remediation. Until that time, based on the figures available today, it appears that the HWCF will continue to be used by the DES as a supplement to the Federal Superfund program, targeted to removal and pre-remedial actions at CERCLIS sites.

NEW JERSEY

OVERVIEW

New Jersey has over 1200 known or suspected hazardous waste sites, including 109 NPL sites, and a vigorous and well-funded cleanup program. More than 800 people in the State's Department of Environmental Protection (DEP) work on hazardous waste cleanup. New Jersey's Legislature has appropriated approximately $235 million for cleanup to date, and in Federal FY 1988 the State received $281.1 million in Federal Superfund assistance. In FY 1989 Federal assistance to New Jersey's program declined to $113.1 million, or 18% of available Superfund monies. The State remains, however, the leading recipient of Superfund assistance, a position it has held for the past four years.

RP Participation New Jersey has also succeeded in obtaining extensive participation from responsible parties through an aggressive enforcement program which seeks private funding for cleanup at every site. RPs are encouraged to negotiate by the prospect of joint and several liability, the threat of treble damages, and the perception that conducting a cleanup will ultimately be less expensive than reimbursing the State for cleanup costs. Under the Hazardous Waste Enforcement program, privately funded minor remedial activities (projects costing less than $100,000) in 1988 cost private parties $12.1 million and taxpayers $500,000. Between July 1986 and December 1988, 135 privately funded major remedial projects cost private parties $29.2 million, while State costs totalled $550,000. Additionally, the Responsible Party Cleanup Element, which deals with more environmentally complex cases, has obtained from RPs $250 million in financial commitments as of December 31, 1988. Finally, the Cost Recovery Element within the Division of Regulatory Affairs has obtained more than $37 million in Federal FY 89 from RPs for cleanup at complex, multiparty sites which are being managed by the Publicly Funded Cleanup Element.

Case Management As indicated above, publicly funded and privately funded cleanups are managed by separate program elements within DEP. Within the program elements, sites are assigned to case management teams. In order to channel cases through the cleanup program efficiently and consistently, the Bureau of Planning and Assessment utilizes a case management strategy (CMS). The Bureau prioritizes sites using the Severity Index Network (SIN), a uniform prioritization model which is a streamlined version of the HRS. A SIN evaluation takes about 30 minutes to complete. To aid in assigning cases to the different program elements, the Bureau has also developed a regulatory and remedial program hierarchy.

Environmental Cleanup Responsibility Act Under New Jersey's Environmental Cleanup Responsibility Act (ECRA), enacted in 1983, industrial facilities that deal with hazardous substances cannot change ownership or cease operations unless the DEP determines that the site is not contaminated, approves a cleanup plan, or receives financial assurances that a cleanup will be performed. If the ECRA is violated, the DEP or a party to the transaction may void the transfer. Approximately 1,200 new ECRA cases arise each year. As of December 31, 1988, ECRA financial assurances totalled approximately $600 million. While the first years of the program saw DEP overwhelmed with requests for ECRA reviews, an intensive program rehabilitation has eliminated the backlog. ECRA program administration is funded through fees paid by the regulated community. Program critics charge that ECRA is anti-industry and discourages manufacturing from remaining in the State.

I. INTRODUCTION

As a heavily industrialized State with over 1200 known or suspected hazardous waste sites, New Jersey has been an early leader in the development of State hazardous waste cleanup programs. The State's Spill Compensation and Control Act, enacted in 1976 and effective in 1977, served as a model for the development of CERCLA. In 1983 New Jersey was also the first State to enact a law, the Environmental Cleanup Responsibility Act, which requires industrial property to be certified as clean prior to transfer or cessation of operations. The State Legislature's commitment to the cleanup program is impressive, with strong funding support available through legislative appropriations, bond funds, and taxes on transfers of hazardous substances. Public sentiment is also behind an aggressive cleanup program, with a recent poll showing that 85% of the State's population favors a clean environment even at the cost of jobs.

The New Jersey Department of Environmental Protection has over 800 staff members devoting at least a portion of their time to hazardous waste cleanup activities. The State has an aggressive enforcement program which seeks private funding for cleanup at all sites. At the same time, the publicly funded cleanup program's sound financial base enables the State to move quickly to address sites where RP participation is lacking.

The program is currently attempting to standardize procedures among its different elements and to present a more "user friendly" image to the regulated community. Looking to the future, DEP personnel see the program maintaining its current level of activity, but with a shift in program emphasis as more major remedial projects move from the RI/FS phase to the construction phase over the course of the next decade. Operations and maintenance will demand an increasing amount of attention within the program as the construction phase is completed on a growing number of projects. The larger, more obvious sites within the State have already been discovered and are being addressed. An assessment group uncovers and evaluates threats posed by new sites, which may present less obvious environmental hazards.

II. STATUTES

New Jersey's Spill Compensation and Control Act provides the primary statutory authority for the State's hazardous waste cleanup program. NJSA §§58:10-23.11a through 58:10-23.11z (1976, amended 1979 through 1987). Under the Act, discharges of hazardous substances are prohibited unless in compliance with a State or Federal permit. Hazardous substances are defined to include petroleum products. The Act establishes the Spill Compensation Fund and provides DEP with authority for conducting emergency response, removals, and remedial actions and for recovering costs and assessing treble damages. The Act also authorizes the DEP to direct RPs to remove or arrange for the removal of a discharge of a hazardous substance. Liability for cleanup and removal costs under the Act is strict, joint and several. Anyone who may be subject to liability for a discharge is required to notify the DEP immediately.

The Environmental Cleanup Responsibility Act [ECRA] provides another component of New Jersey's cleanup program, one that puts the burden of identifying and remediating environmental problems squarely on the responsible parties. The statute requires transferrers of industrial property to obtain either a DEP determination that the property is free from contamination or DEP approval of a cleanup plan. *Id.* §§13:1K-6 through 13:1K-13 (1983). The DEP may void a transfer if the transferrers do not comply with ECRA. The Act also applies when the owners or operators of an industrial facility simply cease operations.

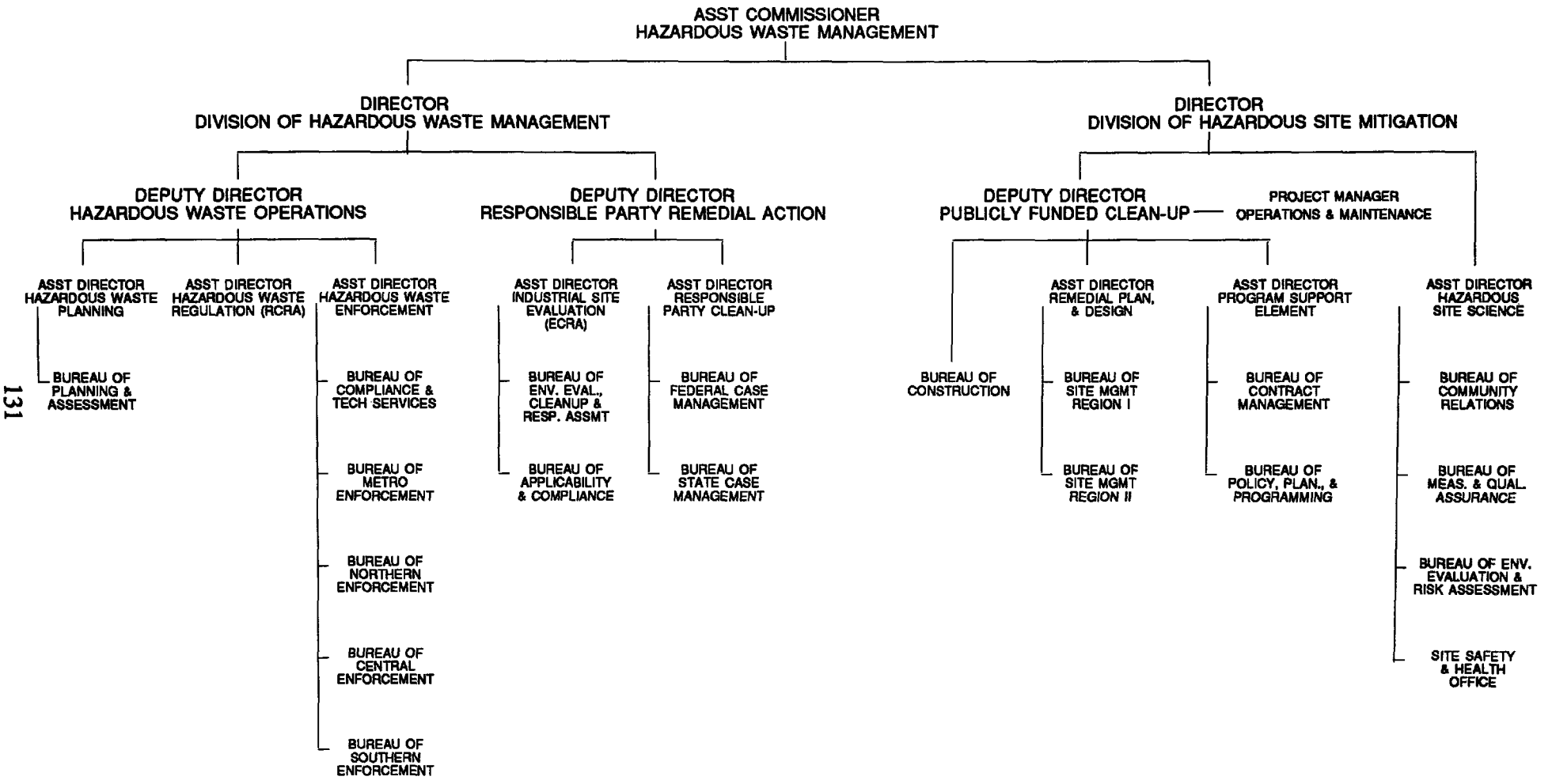
Related authorities are provided by several additional environmental statutes. The Hazardous Substances Discharges Law requires the owner or operator of an industrial establishment, or of real property which once was an industrial establishment, who knows or suspects the occurrence of any hazardous discharge at the site, to inspect and report the incident within 10 days. *Id.* §§13:1K-15 et seq. Under the State Penal Code, anyone who purposely or knowingly causes a reportable hazardous discharge is guilty of a crime of the second degree and subject to a fine of up to $100,000 and/or imprisonment of 5-10 years. Recklessly causing a discharge carries a fine of up to $7,500 and/or imprisonment of 3-5 years. *Id.* §2C:17-2. Finally, the Water Pollution Control Act, *id.* §§58:10A-10 to -20, requires all discharges of pollutants into both surface and ground water to be made in conformity with a State or Federal pollutant discharge elimination permit.

III. PROGRAM ORGANIZATION

The New Jersey Department of Environmental Protection [DEP] is the lead agency responsible for hazardous waste cleanup activities. There are two DEP Divisions which are accountable to the Assistant Commissioner for Hazardous Waste Management--the Division of Hazardous Waste Management and the Division of Hazardous Site Mitigation. Pursuant to a recent reorganization of the hazardous waste cleanup program, each Division administers some aspects of the State's hazardous waste cleanup program. The Division of Hazardous Waste Management has responsibility for the RCRA regulatory program, the hazardous waste enforcement program, management of privately funded cleanups, and program planning and initial site assessment for both Divisions. The Division of Hazardous Site Mitigation administers the publicly funded cleanup program and provides in-house technical support for both privately and publicly funded cleanups. Subdivisions within these Divisions, called "elements" or "bureaus," are responsible for managing different cleanup phases. The DEP finds that the difference between the administrative tasks associated with privately funded cleanups versus those associated with publicly funded cleanups merits placing them under the jurisdiction of separate program Divisions. Figure NJ-1 shows the organization of the program elements within the Hazardous Waste Divisions which are discussed below. In addition, the Division of Water Resources also administers cleanup of sites where the sources of contamination are controlled and ground or surface water quality is a major concern.

The Division of Hazardous Site Mitigation employs 216 people, all of whom are involved in hazardous waste cleanup activities. The Division of Hazardous Waste Management has a staff of approximately 400; roughly 58 work on major privately funded cleanups, 115 are assigned to spill response and enforcement activities associated with smaller contamination incidents, and 122 work on ECRA. Other personnel within the Division work on RCRA, site assessment, and planning activities.

FIGURE NJ-1
CLEANUP PROGRAM ORGANIZATION



The Bureau of Planning and Assessment, within the Division of Hazardous Waste Management, administers the initial site evaluation (which includes a PRP search conducted by the Hazardous Waste Enforcement Element) and assigns the case to the appropriate Division and program element. Minor and straightforward problems involving a single source and/or contaminant affecting a single environmental medium are handled through the enforcement elements of either the Division of Hazardous Waste Management or the Division of Water Resources. Both Divisions seek to administer privately funded cleanups, but have the ability to access public funds when faced with recalcitrant RPs.

For more complex sites with multiple sources or contaminants which impact multiple environmental media, the case will be assigned to the Division of Water Resources, the Responsible Party Clean-Up Element, or the Publicly Funded Clean-Up Element. The Division of Water Resources has the lead for more complex privately funded sites where ground or surface water is the primary environmental medium involved and the source is controlled or easily controlled. If the source is uncontrolled and one or more PRPs are identified, the case will be assigned to either the Bureau of Federal Case Management or the Bureau of State Case Management, both within the Responsible Party Clean-Up Element. This Element currently manages approximately 400 large remedial cases, with a backlog of about 100 cases which is increasing at a rate of 4-5 cases per month. If a property transfer is involved, the case may be assigned to the Industrial Site Evaluation Element, which handles ECRA administration, as discussed below under <u>Special Topic -- ECRA</u>. If no PRP is found or the PRP is unwilling or unable to participate, these more complex cases are assigned to the Publicly Funded Clean-Up Element, which has a current roster of approximately 98 sites.

Both Clean-Up Elements assign cases to case management teams, which generally consist of three people--a manager, a technical coordinator, and a geologist. In the Responsible Party Clean-Up Element there are 58 case managers who are each assigned about 8 or 10 cases, while the Publicly Funded Clean-Up Element has about 24 site managers for 98 sites. (A contaminated location is referred to as a case within the Responsible Party Clean-Up Element, and as a site within the Publicly Funded Clean-Up Element.) The two Elements remain in close communication concerning cases, which can easily shift from one Division to the other. The Responsible Party Clean-Up Element also

has negotiation teams which, in conjunction with enforcement attorneys from the Hazardous Waste Enforcement Element of the Division of Regulatory Affairs, conduct negotiations with PRPs.

Within the Division of Hazardous Site Mitigation, the Hazardous Site Science Element provides a variety of scientific and technical support services to both the publicly and the privately funded cleanup programs. The Hazardous Site Science Element contains the Bureau of Environmental Evaluation and Risk Assessment, the Bureau of Environmental Measurement and Quality Assurance, the Office of Site Safety and Health, and the Bureau of Community Relations. The Bureau of Environmental Evaluation and Risk Assessment, with a staff of 49, provides project review and expert scientific assistance in the areas of environmental fate and transport, environmental impacts, contaminant characterization, environmental and public health risk assessment, and toxicology. The Bureau of Environmental Measurement and Quality Assurance's mission relates to the quality of the data which form the basis for hazardous site remediation designs and subsequent evaluations. This Bureau's staff of 36 collects or oversees the collection of environmental samples to insure that the samples are representative and to maintain their integrity for later analysis. The Office of Site Safety and Health, with a staff of 7, performs reviews of site conditions and procedures to ensure that activities are performed in a manner to preclude impacts to on-site personnel and off-site receptors. The Bureau of Community Relations, with 14 staff members, coordinates site-connected public relations.

The DEP does not have the authority to enter into contracts worth more than $7,500. Contracting authority rests with the Department of the Treasury, which works with the Division of Hazardous Site Mitigation's Bureau of Contract Management to obtain and administer contracts for work at publicly funded sites. The Department of Treasury's Toxic Waste Procurement Unit employs five professionals who are located within the DEP building; they are funded by the DEP. The Bureau of Contract Management staff includes seven professionals, funded by the Spill Compensation Fund and the Hazardous Discharge Site Cleanup Fund.

When a publicly funded site reaches the construction phase, it is transferred to the Bureau of Construction, which must provide on-site managers to oversee the proper use of State funds. DEP personnel emphasize that these on-site managers do not act as de facto

partners of the site contractors, but serve in a watchdog capacity as regards the use of State resources. It is anticipated that operations and maintenance of publicly funded projects will be handled by a separate Operations and Maintenance group within the Division of Hazardous Site Mitigation.

The Responsible Party Clean-Up Element's goal is financial self-sufficiency; this is being accomplished by requiring RPs to pay the direct and indirect administrative costs associated with cleanup. The Division of Hazardous Site Mitigation, which includes the Publicly Funded Clean-Up Element, is funded through the Spill Compensation Fund; its yearly administrative budget is approximately $12 million. Other positions throughout the DEP which are related to site cleanup, such as spill response and enforcement staff members, are funded by the Spill Compensation Fund.

Other Divisions within DEP, as well as other State agencies, also participate in cleanup activities. The Division of Regulatory Affairs' attorneys review all Spill Act Directives and provide case management assistance, particularly during negotiations with RPs. In addition, the Cost Recovery Element within the Division of Regulatory Affairs pursues private funding for cleanup at a select group of major, multi-generator sites, such as landfills and hazardous waste transfer or storage facilities where the cleanup is being managed by the Publicly Funded Clean-Up Element. The Division of Regulatory Affairs' staff attorneys also work with personnel from the Department of Law and Public Safety's Division of Law, which represents the New Jersey DEP in all formal proceedings, including administrative hearings. The Environmental Protection Section in the Division of Law represents the DEP in civil actions, while criminal enforcement is conducted by the Environmental Prosecution Task Force in the Division of Criminal Justice. Approximately 20 attorney work-years within the Environmental Protection Section are devoted to cleanup activities.

The DEP's Division of Water Resources is responsible for administering the New Jersey Water Pollution Control Act through the issuance of permits for discharges to surface and ground water. This Division also develops ground-water and surface-water quality standards, permit discharge limitations, and cleanup levels for ground water. When contaminated ground water affects drinking water supplies, either public or private, the Bureau of Water Supply in the Division of Water Resources conducts investigations of the

extent of water supply contamination and offers low-interest loans to enable affected municipalities to provide alternative water supplies. In addition, the Division supplies the geologists for the Clean-Up Elements' case management teams; the geologists interpret ground-water and soils issues and comment on surface-water issues at sites.

The Office of Public Participation within the DEP coordinates general educational and media activities. The State's Department of Health has assisted in at least one case by preparing fact sheets for local physicians on the health effects of chromate waste, 300 million tons of which was disposed of at 117 locations throughout Hudson County.

The day-to-day relationship between EPA Region II and the DEP's program personnel is described as good, although there is occasional friction over conflicting funding and enforcement priorities. The DEP does not yet have a final Superfund Memorandum of Agreement (SMOA) with EPA, but a draft SMOA is currently receiving upper management review by DEP before transmission of the document to EPA for approval. Upper management and enforcement personnel within DEP feel it is important to develop a SMOA, while it is not a priority with case managers and other technical personnel.

IV. FUNDING

New Jersey's cleanup program has been consistently and strongly supported by the State Legislature, which has been willing to appropriate substantial sums for the program. In addition, the State has been receiving the lion's share of available CERCLA dollars and has aggressively pursued private funding. As of December 31, 1988, approximately $2.2 billion in public and private funds have been committed to cleanup in New Jersey. The various sources of funding are discussed below and are shown in Table NJ-1.

TABLE NJ-1

DOLLARS COMMITTED TO CLEANUP AS OF DECEMBER 31, 1988

(IN MILLIONS OF DOLLARS)

SOURCE	1984 +	1985 +	1986 +	1987 +	1988 +
GENERAL FUND	$ 0.0	$150.0	$150.0	$190.0	$235.0
SPILL FUND	80.1	88.2	96.0	118.3	143.3
BOND FUND	100.0	100.0	300.0	300.0	300.0
SUPERFUND++	52.7	75.7	93.1	148.8	429.9
RP FINANCIAL ASSURANCE	22.9	30.7	53.0	82.8	246.7
ECRA FINANCIAL ASSURANCE	5.8	83.5	323.8	539.4	719.5
RCRA FINANCIAL ASSURANCE+++	N/A	N/A	6.5	32.6	103.9
TOTALS	$261.5	$528.1	$1,022.4	$1,411.9	$2,178.3

\+ Represents calendar year contributions and all prior year commitments.

++ Superfund dollars awarded in Federal Fiscal Year ending September 30th of each year.

+++ Financial assurance associated with facilities that have approved closure plans where the cost estimate for closure is greater than $100,000.

RP = Responsible Party N/A = Not Available
ECRA = Environmental Cleanup Responsibility Act
RCRA = Resource Conservation and Recovery Act

(Reprinted from Hazardous Waste Program Status Update: April 1989, NJDEP Hazardous Waste Management Programs)

Two separate State funds support the cleanup program--the Spill Compensation Fund and the Hazardous Discharge Site Cleanup Fund. The main source of revenue for the Spill Compensation Fund is a transfer tax on hazardous substances, including petroleum products, which generated approximately $21.9 million in FY 89. This Fund also is credited penalties related to the Spill Compensation and Control Act, any interest on the Fund, and Fund monies recovered from RPs. Cost recovery contributed $2.8 million in FY 89 and interest contributed $3.2 million. The cash balance as of 8/8/89 is $68.8 million and the cumulative revenue since the inception of the Fund is $180.7 million. The Spill Compensation Fund is available for administrative costs, emergency response, removals, studies and design, remedial actions, operations and maintenance, and CERCLA match. The Spill Compensation Fund supports DEP program expenses, including personnel costs.

The Spill Compensation Fund is also available to settle third-party claims for personal or property damages resulting from a discharge of a hazardous substance. A one-year statute of limitations applies, measured from the date of discovery of the damage. The DEP must attempt to arrange a settlement between the claimant and the RP, but if the source of the discharge is unknown or cannot be determined, the DEP must settle the claim against the Spill Compensation Fund. 1985 was the first year claims were awarded. Since then 526 claims have been paid for a total of approximately $2,361,000. In FY 88, 260 claims were awarded for a total of $567,024. Most claims are filed by residential property owners seeking compensation for the costs of obtaining a municipal water supply hook-up; these claims are rarely for more than $2-3,000 each; $40 million in Fund monies are currently authorized for payment of pending third-party claims.

The State turns to the Spill Compensation Fund first to support cleanup activities, but the Hazardous Discharge Site Cleanup Fund is available for the same purposes. This Fund is credited legislative appropriations, termed General Funds, and bond authorizations. In 1986, the Legislature approved an appropriations package which provides the State cleanup program with $225 million over a five-year period ending in 1992. In 1988, the Legislature approved the $60 million capitalization of a Water Supply Replacement Trust Fund to be paid from the Hazardous Discharge Site Cleanup Fund. At the same time, however, the Legislature approved an additional $45 million appropriation for 1993. There are also $300 million in voter-approved bond issues, $100 million of which have been

appropriated, although no bonds have been offered for sale. The DEP does not anticipate the need to use bond funds at least through the end of FY 90. The Hazardous Discharge Site Cleanup Fund shows, as of 8/8/89, $14 million in cash and $62.7 million in receivables--$12.7 million in Legislative appropriations still due from FY 89, which ended on 6/30/89, and $50 million in appropriations credited for FY 90.

New Jersey also receives substantial assistance from the Federal government. In Federal FY 88, the State received $281.1 million. Due to increased requests for funds from other states, the State received less financial assistance in Federal FY 89; its share was reduced to $113.1 million--approximately 18% of available Superfund monies.

As of December 31, 1988, the State had expended $169.5 million of the State and Federal public funds available for remedial activities at State-lead sites. Of that amount $78.2 million was provided by the Spill Fund, $66.2 million came from Hazardous Discharge Site Cleanup Fund sources, and $25.1 million was from the Federal Superfund program.

Due to its aggressive enforcement stance, the State has been relatively successful in obtaining private funds for cleanup activities. In calendar year 1988, the Hazardous Waste Enforcement Element secured $12.1 million in private monies for 632 privately funded minor remedial activities (projects costing less than $100,000). State expenditures on these projects was approximately $500,000. Between July 1986 and December 1988, the Element also saw to completion 135 privately-funded major remedial projects (costing over $100,000) at a cost to private parties of $29.2 million. The cost to taxpayers for these sites was $550,000. In addition, the Responsible Party Clean-Up Element, which deals with more environmentally complex cases, also actively pursues private funding for its cleanups. As of December 31, 1988, RPs have provided $250 in financial commitments for this Element's cases. Finally, the Cost Recovery Element within the Division of Regulatory Affairs seeks private funding for complex, multi-party sites which are being managed by the Publicly Funded Clean-Up Element. In federal FY 89, the Cost Recovery Element obtained in excess of $37 million for cleanup activities.

All DEP personnel contacted expressed confidence in the Legislature's continued willingness to support the hazardous waste cleanup program through substantial financial commitments. The Legislature's capitalization of the Water Supply Replacement Trust Fund

with $60 million in uncommitted Hazardous Discharge Site Cleanup Fund monies, however, highlights the vulnerability of uncommitted funds to political pressures.

V. REMEDIATION PROCESS

Case Management Strategy

The Bureau of Planning and Assessment, within the Division of Hazardous Waste Management, is responsible for administering an initial site evaluation, which includes a PRP search conducted by the Hazardous Waste Enforcement Element. The Bureau then assigns cases to the appropriate program element. To assist in this task, the Bureau in 1987 developed a case management strategy (CMS) which enables it to characterize sites and channel them through the program in a streamlined and consistent manner, thereby avoiding duplicative and inefficient actions.

The Bureau is compiling a computerized inventory of the sites that are known or potential hazardous waste remediation cases. This database, which is used only for internal DEP purposes, is referred to as the Comprehensive Site List (CSL). CSL sites which are inactive or unassigned are prioritized for assessment based upon general criteria, such as SIC code and quantity of hazardous waste. This list of prioritized sites is referred to as the Site Assessment Priority List. These sites are once again prioritized for remediation in light of the information gained during the assessment. The assessment is based upon the Severity Index Network (SIN), a uniform prioritization model which is a streamlined version of the HRS. A SIN evaluation can be completed in 30 minutes. Eventually, the SIN is to be replaced by the Remedial Priority System (RPS), currently under development. The RPS will be specifically designed to prioritize sites for remedial activity in consideration of any proximate risks, overall risk, cost and other concerns specific to New Jersey.

To aid in case assignment once the assessment and prioritization are complete, the Bureau of Planning and Assessment has developed a regulatory and remedial program hierarchy for case assignments. This hierarchy is based upon the type of case involved and the different elements' ability to effectuate remedial action and maximize RP participation. The Bureau then tracks cases through the different program elements, overseeing their progress and, if needed, reassigning them.

Emergencies involving hazardous materials are not processed through the CMS, but are handled by the DEP's Division of Environmental Quality, Bureau of Emergency Response. This Bureau will respond to fires, explosions and some accidental spills. After stabilizing the emergency and overseeing contractor performance under the DEP's Emergency Contract, the Bureau of Emergency Response will refer the case to the appropriate regional enforcement office, or to the Bureau of Planning and Assessment if it poses a long-term threat.

Minor and straightforward problems involving a single source or contaminant which impacts a single environmental medium are handled through the enforcement elements of either the Division of Water Resources or the Division of Hazardous Waste Management. For more complex sites with multiple sources or contaminants, the case will be assigned to the Bureau of Federal Case Management or the Bureau of State Case Management, both within the Responsible Party Clean-Up Element. If the case involves a controlled source, however, and ground or surface water is of major concern, it will be assigned to the Division of Water Resources. The Responsible Party Clean-Up Element currently manages approximately 400 large remedial cases. If a transfer or closure of the site is involved, the case may be assigned to the Industrial Site Evaluation Element, which handles ECRA administration, as discussed below under Special Topic -- ECRA. If no PRP is found or the PRPs are unwilling or unable to participate, the case is assigned to the Publicly Funded Clean-Up Element, which has a current roster of about 98 projects. When a publicly funded site reaches the construction phase, it is transferred to the Bureau of Construction, which must provide on-site managers to oversee the proper use of State funds.

Enforcement Authority

Under the Spill Compensation and Control Act, liability for cleanup and removal costs is strict, joint and several. NJSA §58:10-23.11g(c). Priority liens can be asserted against the property that is the site of the discharge, while a non-priority lien can be asserted against all real or personal property of the discharger in order to secure payment of cleanup and removal costs. *Id.* §58:10-23.11f(f). DEP authority to issue administrative cleanup orders, called Spill Act Directives, is also contained in the statute. *Id.* 58:10-23.11f(a). Dischargers may be ordered to clean up a site and treble damages are available

for failure to comply with a Spill Act Directive. *Id.* §58:10-12.11f(a). The New Jersey Supreme Court has interpreted dischargers to include persons who are in any way responsible for the hazardous substance which was discharged. In the Matter of Kimber Petroleum Corp., 539 A.2d 1181 (N.J. 1988), appeal dismissed 102 L. Ed.2d 349 (1988). Generators, owners, operators, transporters, brokers, and other parties therefore can all be considered dischargers for purposes of the Act.

A Spill Act Directive is always issued at every stage in a case, even if the RP is cooperating, in order to preserve the treble damages option, although the State has never collected treble damages. Moreover, the New Jersey Supreme Court has implied a "good cause" defense to the imposition of treble damages to avoid constitutional infirmity. Kimber Petroleum, 539 A.2d at 1189; In the Matter of J.I.S. Industrial Service Company Landfill, 539 A.2d 1197, 1203 (N.J. 1988). The "good cause" defense requires "an objectively reasonable basis for believing that the DEP directive was either invalid or inapplicable." In the Matter of J.I.S., 539 A.2d at 1203. The DEP interprets the Act as providing administrative consent order authority, and has special teams within the Responsible Party Clean-up Element which conduct negotiations with RPs.

The DEP may seek an injunction to prohibit the continuation of any violation of the Spill Compensation and Control Act. NJSA §58:10-23.11u. Civil penalties of up to $50,000/day are also available for a violation of the Act. *Id.* Criminal penalties are only applicable under the Act where false information is knowingly given as part of a claim for damages. There is no statutory authority for citizen suits.

Under the State Penal Code, anyone who purposely or knowingly causes a reportable hazardous discharge is guilty of a crime of the second degree and subject to a fine of up to $100,000 and/or imprisonment of 5-10 years. Recklessly causing a discharge carries a find of up to $7,500 and/or imprisonment of 3-5 years. *Id.* §2C:17-2.

RP Participation

There are currently about 400 cases in the Responsible Party Clean-Up Element, compared with 85 in the Publicly Funded Clean-Up Element. The State has an aggressive enforcement program which seeks private funds for cleanup in all cases. According to DEP personnel, the possibility of joint and several liability for all cleanup costs associated with

a site brings RPs to the negotiating table. The threat of liability for treble damages under the Spill Compensation and Control Act is also a motivating factor in RP participation, although the State has never actually had to enforce the treble damages provision. In addition, the ability of the State to move quickly to spend public funds for remediation is a good incentive to settle. There is a perception within the regulated community that publicly funded projects are more expensive than privately funded cleanups, and financially solvent RPs are aware that at some point they will be required to reimburse the State for expenditures of public funds.

The point at which an RP will decide to enter into an ACO, however, depends upon the type of case involved. A case will be referred to the Publicly Funded Clean-Up Element if the RPs refuse to settle, and in cases with multiple RPs, they tend to stall through the RI/FS phase. After the RI/FS phase is completed by the State, and the RPs can see the remedial situation and attendant costs they are facing, they will often sit down to negotiate an ACO.

Cleanup Standards/Design

The DEP currently employs a site-by-site approach in setting cleanup standards, using ARARs where applicable and developing action levels for soil. Water quality cleanup standards are determined by the Division of Water Resources; soil action levels are determined by cleanup program personnel. In making its decision on cleanup standards applicable to a particular site, the Division of Water Resources will consider existing State and Federal standards for surface water, ground water, and drinking water. The DEP's Soil Standards Committee is working to establish soil cleanup standards. The cleanup program has no set design criteria for cleanup projects, but sets best-available-technology (BAT) limits on its water quality cleanup standards.

Contracting Practices

Large construction contracts (over $250,000) are issued in an open, competitive manner. Certain lab and engineering contracts have been approved on a term contract basis, with a prequalified list. While the DEP has in-house lab capability, it is generally used for

monitoring activities. For investigation and remediation activities, the DEP uses term contracts.

Cleanup Progress

Since New Jersey's hazardous waste cleanup program has been active throughout the 1980s, the DEP is seeing an increasing number of large projects shifting to the construction and operations and maintenance phases. Meanwhile, an active assessment group is uncovering and evaluating new sites.

During calendar year 1988, the Hazardous Waste Enforcement Element saw to completion 632 minor, privately funded remedial projects (costing less than $100,000), and 135 major, privately funded projects. Table NJ-2 shows the status of program activity as of 12/31/88, while Table NJ-3 shows completed activities through that date.

Public Participation and Community Relations

The Spill Compensation and Control Act requires that all cleanup actions be in accordance with the NCP to the greatest extent possible. To that end, the DEP follows NCP procedures regarding public participation during State cleanups. As a matter of policy, there is a public kick-off meeting prior to contract signing at the various cleanup phases. The Bureau of Community Relations, within the Division of Hazardous Site Mitigation, coordinates site-related public messages.

VI. SPECIAL TOPIC -- ECRA

The Environmental Cleanup Responsibility Act (ECRA), enacted in 1983, applies to owners and operators of industrial facilities which generate, transport, handle or dispose of hazardous substances and wastes and which fall into the Standard Industrial Classification (SIC) Code number groups of 22-39, 46-49, 51, and 76. There are roughly 15,000 industrial establishments in New Jersey which at some time may fall under ECRA. Before transferring the facility or ceasing operations, ECRA requires that the owner or operator obtain either 1) DEP approval of a Negative Declaration that the site is not contaminated, 2) approval of a cleanup plan specifying remediation to occur prior to the transfer, or 3) an

TABLE NJ-2

Summary* of New Jersey's Hazardous Waste Remedial Program

UNDERWAY REMEDIAL PROGRAM PROJECT ACTIVITY+

	NPL SITES		NON-NPL SITES		TOTAL SITES	
RI/FS	PROJECTS	AT SITES	PROJECTS	AT SITES	PROJECTS	AT SITES
Publicly Funded	49	45	11	11	60	56
Privately Funded	29	24	71	65	100	89
TOTAL	**78**	**69**	**82**	**76**	**160**	**145**
	160 RI/FS PROJECTS COMPLETED AT 145 SITES					
DESIGN	PROJECTS	AT SITES	PROJECTS	AT SITES	PROJECTS	AT SITES
Publicly Funded	20	18	1	1	21	19
Privately Funded	4	3	11	10	15	13
TOTAL	**24**	**21**	**12**	**11**	**36**	**32**
	36 DESIGN PROJECTS COMPLETED AT 32 SITES					
CONSTRUCTION	PROJECTS	AT SITES	PROJECTS	AT SITES	PROJECTS	AT SITES
Publicly Funded	10	10	5	5	15	15
Privately Funded	12	11	14	11	26	22
TOTAL	**22**	**21**	**19**	**16**	**41**	**37**
	41 CONSTRUCTION PROJECTS COMPLETED AT 37 SITES					

* As of December 31, 1988

\+ More than one RI/FS, Design and/or Construction may be required to totally remediate a site. Some actions undertaken at a site will not require all phases of the remedial process. Therefore, the number of projects provided may differ from the total number of sites. However, these statistics provide an accurate representation of the level of effort required for remediation.

(Reprinted from Hazardous Waste Programs Status Update: April 1989, NJDEP Hazardous Waste Management Programs)

TABLE NJ-3

Summary* of New Jersey's Hazardous Waste Remedial Program

COMPLETED REMEDIAL PROGRAM PROJECT ACTIVITY+

	NPL SITES		NON-NPL SITES		TOTAL SITES	
RI/FS	PROJECTS	AT SITES	PROJECTS	AT SITES	PROJECTS	AT SITES
Publicly Funded	39	32	3	3	42	35
Privately Funded	18	16	44	36	62	52
TOTAL	**57**	**48**	**47**	**39**	**104**	**87**
	104 RI/FS PROJECTS COMPLETED AT 87 SITES					
DESIGN	PROJECTS	AT SITES	PROJECTS	AT SITES	PROJECTS	AT SITES
Publicly Funded	23	19	1	1	24	20
Privately Funded	15	13	22	19	37	32
TOTAL	**38**	**32**	**23**	**20**	**61**	**52**
	61 DESIGN PROJECTS COMPLETED AT 52 SITES					
CONSTRUCTION	PROJECTS	AT SITES	PROJECTS	AT SITES	PROJECTS	AT SITES
Publicly Funded	36	27	13	11	49	38
Privately Funded	31	24	38	37	69	61
TOTAL	**67**	**51**	**51**	**48**	**118**	**99**
	118 CONSTRUCTION PROJECTS COMPLETED AT 99 SITES					

* As of December 31, 1988

\+ More than one RI/FS, Design and/or Construction may be required to totally remediate a site. Some actions undertaken at a site will not require all phases of the remedial process. Therefore, the number of projects provided may differ from the total number of sites. However, these statistics provide an accurate representation of the level of effort required for remediation.

(Reprinted from Hazardous Waste Programs Status Update: April 1989, NJDEP Hazardous Waste Management Programs)

Administrative Consent Order (ACO) allowing the transfer to proceed prior to compliance as long as either party provides financial assurance that the cleanup will be performed.

The DEP may impose penalties of up to $25,000 per day for any violation of ECRA, and either the DEP or a party to the transaction may void the property transfer. Although no transfers have been voided to date, the possibility of voidance has caused the lending community in New Jersey to be very stringent with its clients regarding ECRA compliance. The ability to void transfers has thus had the effect of transforming the banks into de facto ECRA enforcers. This results in the DEP receiving approximately 5-6,000 requests per year for a Determination of Applicability of ECRA to a particular transaction. A fee is charged for processing these requests, and ECRA is found to be inapplicable in 95% of these determinations. In transfers where the facilities clearly fall within ECRA's purview, the owner or operator will skip the Determination of Applicability phase and simply file with the DEP an initial notice of the sale.

Approximately 250 requests for a Determination of Applicability are answered affirmatively each year and are included in the 1,200 initial notice applications that are received, on average, each year. These cases are divided into three separate case management units based on the complexity of the site. Sixty-three percent (63%) of the cases are assigned a "Low Environmental Concern" rating, indicating that, while ECRA applies, the site is clean and a Negative Declaration will be approved; processing time is approximately 120 days. "Medium Environmental Concern" cases (about 25%) present an operations history which creates concern and the owners or operators will be required to demonstrate that a problem does not exist; processing time is roughly 180 days. "High Environmental Concern" cases (another 12%) require more complex evaluation, such as those dealing with petroleum refineries, chemical plants, and other businesses which process significant amounts of hazardous substances or wastes.

About 4% of ECRA cases involve an application for an ACO allowing the transaction to occur prior to compliance; these applications are processed in about 21 days' time. The DEP obtains financial assurances from the parties sufficient to clean up the worst-case scenario. As of December 31, 1988, financial assurances totalled approximately $600 million. ACOs contain stipulated penalties and strict delivery dates.

The first few years of the program found the DEP overwhelmed by the number of ECRA reviews requested. Starting in 1986, an extensive program review and rehabilitation initiative has resulted in an elimination of the case backlog and a stabilizing of the workload. In FY 88, 824 Negative Declarations were issued and 87 formal Cleanup Plans were approved; figures for the first half of FY 89 are consistent with this activity level. Twenty-six (26) facilities completed formal Cleanup Plans in FY 88, while 200 completed other cleanup activities with ECRA oversight. Two-hundred eleven (211) ACOs were issued in FY 88.

Compliance with ECRA does not prohibit the DEP from directing site cleanup under any other statute, such as the Spill Compensation and Control Act. If a site is being managed under another DEP cleanup program at the time ECRA becomes applicable, however, it will be transferred for administration under the ECRA program. Communication among DEP personnel ensures that Spill Act and ECRA cleanup requirements are consistent, and the same case management team may follow a case from the Responsible Party Clean-Up Element to the ECRA program.

Within DEP, ECRA is administered by the Industrial Site Evaluation Element of the Division of Hazardous Waste Management. The program staff numbers approximately 122. ECRA administrative costs were initially covered by the Spill Compensation Fund, but the program is now supported entirely by the regulated community through fees related to ECRA activities. In FY 89, the program generated $5.3 million in fees. Projected revenues for FY 90 are $6.4 million; any excess may be rolled over from year to year.

The Industrial Site Evaluation Element is divided into two bureaus. The Bureau of Environmental Evaluation Cleanup and Responsibility Assessment (BEECRA) manages technical review and remediation oversight, while the Bureau of ECRA Applicability and Compliance (BEAC) issues applicability determinations and ACOs, conducts compliance monitoring, and provides administrative support. Sixty-five (65) personnel are case managers and/or supervisors who assess and approve initial cleanup plans, sampling, and final cleanup. There are 25 application and enforcement document processors who administer the fee system and the ACO process. Sixteen (16) staff members are technical coordinators and 12 or 13 are geologists who are on assignment from the Division of Water Resources.

Some have charged that ECRA is anti-industry and discourages manufacturing from remaining in New Jersey. Karl Delaney, Assistant Director for the Industry Site Evaluation Element, maintains that industry values "ECRA-clean" property and that any movement of manufacturing out of the State is attributable to a general shift to service industries in New Jersey and the greater availability of cheaper industrial labor in other parts of the country.

ECRA program administration is in the process of being streamlined through the adoption of standard operating procedures (SOPs), the development of teambuilding and increased communication among program personnel, and the use of model documents. Enforcement is also being given greater priority; enforcement actions are expected to increase from an average of 18 per year to between 80 and 100 in 1989.

Noteworthy among ECRA's successes is the ACO negotiated at the time of the merger of General Electric Company and RCA Corporation. RCA was required to post $35.6 million in surety bonds and letters of credit to cover potential cleanup costs at RCA's 28 New Jersey locations.

VII. PROGRAM OUTLOOK

Since New Jersey has taken the lead over other States in both the size and aggressiveness of its cleanup efforts, its program has progressed further toward its cleanup goals than have most other programs. As a result of this maturation process, DEP is facing several new challenges which deserve mention.

First, a growing number of projects are reaching both the construction and the operations and maintenance phases. This trend will require a gradual shift in the balance of program resources, which may be difficult to accomplish without draining DEP resources away from ongoing RI/FS and Design activities. In addition, DEP personnel mentioned unexpected technological problems and costs associated with ongoing operations and maintenance activities. For example, the preferred clay for site-capping contains an ion that, when exposed to air, produces sulfuric acid. The acid kills the vegetation covering the cap, necessitating replanting and/or the application of lime to the cap.

In addition, the State is beginning to address sites where the sources of contamination are more difficult to ascertain. DEP personnel feel that the more obvious sites have largely been discovered and are being addressed. They are now uncovering sites which will require greater investigative activity and, potentially, more sophisticated engineering solutions.

While the funding support for New Jersey's hazardous waste cleanup program has been consistently and impressively strong, the potential for an erosion of this funding base also clearly exists. The DEP is seeing a large reduction in its share of Federal monies as other States compete more aggressively for available funds. The State Legislature also recently capitalized a Water Supply Replacement Trust Fund with $60 million in uncommitted Hazardous Discharge Site Cleanup Fund monies, highlighting the vulnerability of uncommitted cleanup funds to competing legislative initiatives. If it does prove increasingly difficult to trace contamination sources for newly discovered sites, private funding may be less available in the future.

Finally, other States should take great interest in monitoring the ability of the ECRA program in preventing future Spill Act cases. While the program has made great strides in a relatively short period of time, many of its successes involve negotiating financial assurances rather than completing actual remedial activities.

The elements which have spurred New Jersey's cleanup program innovations--high population density, intense industrial development, and strong public support for site remediation--will likely remain constant for the foreseeable future. It therefore follows that expectations are high that the State will continue in its leadership role as it confronts the challenges ahead.

NORTH CAROLINA

OVERVIEW

North Carolina's legislature has designed a superfund program to facilitate the cleanup of State inactive hazardous waste sites without severely jeopardizing the financial status of North Carolina's businesses. Appropriations are virtually the sole source of funding for the State's small Inactive Hazardous Sites Cleanup Fund, which has received a total of $600,000 since its inception in 1987. More than half of the funding for the State superfund program staff comes from Federal grants, and the State relies on the Federal program to conduct most emergency response actions.

Reliance on Voluntary Cleanups Because of funding limitations, the program is presently focusing on encouraging voluntary cleanups rather than initiating enforcement actions or State-funded cleanups. Program officials view publication of the State Priority List and provisions for recording the presence of hazardous waste on the deed for a site as the principal methods for pressuring RPs into voluntary cleanup efforts. The North Carolina statute also encourages RP participation through a number of provisions. The State must solicit RP cooperation before issuing orders or starting its own cleanup efforts. When an RP performs a voluntary cleanup at a non-NPL site, its liability for the cleanup is limited to $3 million, it is exempted from most of the requirements for public participation in the cleanup process, and the site is not included on the State Priority List.

Size of Program and Problem North Carolina's Superfund Section has twenty employees, most of whom work on Federal CERCLA matters. Four employees are assigned to State superfund issues, three of them part-time. Since its establishment in 1987, the State program has focused on identifying all inactive hazardous substances sites in the State, and has begun to prioritize these sites using a system similar to the federal Hazard Ranking System. Of approximately 800 sites in North Carolina on CERCLIS, the State has performed preliminary assessments on about 775 and site investigations on 200. There are 85 sites on the State Priority List and 22 North Carolina sites on the NPL, 20 final and 2 proposed.

I. INTRODUCTION

The North Carolina superfund program was initiated in July 1987 with the enactment of the North Carolina Inactive Hazardous Sites Law. N.C. Gen. Stat. §130A-310 through -310.12 (July 1987, amended June 1989). Although various groups within the legislature had pushed since 1984 for state superfund legislation that would complement the federal law, it was not until 1987 that a bill was finally passed. The 1987 statute mandated the development of information on the status of hazardous waste sites in North Carolina, encouraged voluntary cleanups, and authorized a cleanup fund with cost recovery authority.

The North Carolina superfund program is administered by the Superfund Section within the Solid Waste Management Division of the Department of Environment, Health, and Natural Resources. This Section oversees state-fund cleanups of inactive sites as well as state participation in federal remedial actions. If there is evidence of hazardous waste disposal after November 1980, the site is handled by the State's RCRA program, administered by the Hazardous Waste Section within the Solid Waste Management Division.

The Superfund Section has concentrated during its first two years on the compilation of information about hazardous waste sites in the state. The first State Inactive Hazardous Sites Inventory was published in May 1989 and listed 85 sites on the State Priority List. North Carolina has identified approximately 600 additional sites at which contamination is suspected, but more data is needed to determine their priority status. North Carolina has 20 sites on the National Priority List with 2 additional sites proposed.

The North Carolina legislature has sent clear signals that it wants a phased-in superfund program that will keep North Carolina companies in business while still achieving some cleanup activity in the State. This philosophy is evident in the level of funding provided to the Inactive Hazardous Sites Cleanup Fund for State cleanup activities. Since 1987 the legislature has appropriated a total of only $600,000 to the Fund, of which $344,000 has been expended for one removal action. The Fund now contains $256,000. A study on potential funding sources prepared recently by the Governor's Waste Management Board recently concluded that general appropriations was the most acceptable method of funding in North Carolina.

One of the primary enforcement mechanisms provided by the statute--the authority to perform a state cleanup and to recover costs--is not being implemented at this time because of the lack of funding. Consequently, the Superfund Section is focusing on encouraging voluntary cleanups rather than initiating enforcement actions or state-funded cleanups. Program officials view deed recordation and publication of the State Priority List as the principal methods of pressuring responsible parties into voluntary actions. The state superfund act encourages voluntary cleanups with two unusual provisions: 1) a $3 million cap on responsible party liability if a voluntary cleanup is performed; and 2) the exemption from most of the public participation requirements for voluntary actions.

At present, staff time is fully occupied with CERCLA issues and the oversight of voluntary efforts. The program is developing a strategy for identifying responsible parties and determining resources necessary for a strong enforcement program. While program officials think that voluntary cleanup efforts will address a large number of sites, the voluntary process will not clean up all sites. Therefore, once voluntary actions decline, program officials recognize they will need to shift to a greater emphasis on enforcement. They hope to convince the legislature that statutory changes and increased funding are necessary.

II. STATUTORY PROVISIONS

Inactive Hazardous Sites Act

The primary authority for North Carolina's hazardous waste cleanup program lies in the Inactive Hazardous Sites Act (IHSA), N.C. Gen. Stat. §§130A-310 through -310.12 (July 1987, amended June 1989).

Enforcement Authority The IHSA provides the State with the authority to order a responsible party (RP) to conduct monitoring, testing, and analysis whenever the State determines that there is a release, or substantial threat of a release, of a hazardous substance into the environment from an inactive hazardous substance or waste disposal site. N.C. Gen. Stat. §130A-310.1. Prior to entry of such an order, the State must first solicit cooperation from the RP. *Id.* If the party fails to take such action, or if the State is unable to locate an RP, the State may perform the testing using funds from the Inactive Hazardous Sites Cleanup Fund (Cleanup Fund). *Id.*

If the State issues a written declaration that a site endangers the public health or the environment, the State may order an RP to develop and implement a remedial action program. N.C. Gen. Stat. §130A-310.3. "Where possible," however, the State must first seek the cooperation of the RP or any other appropriate State or federal government to clean up the site. *Id.* Whenever the RP fails to clean up or if an RP cannot be found, the State may do so with funds from the Cleanup Fund. N.C. Gen. Stat. §130-310.6. After completion of the cleanup action, the State must issue an order demanding payment

from the RPs, and bring an action for reimbursement if payment is not made promptly. N.C. Gen. Stat. §§130A-310.6(a)(3) and 130A-310.7(a). In such a court action, the State must show that a danger to public health or the environment existed and that the State complied with the IHSA. N.C. Gen. Stat. §130A-310.7(a).

If an imminent hazard exists which is likely to cause serious harm to public health or environment before a remedial action plan can be developed, the State may order an RP to take immediate action, or may seek an injunction. N.C. Gen. Stat. §130A-310.5. The statute still requires solicitation of RP cooperation prior to entering the order unless the harm to the public or the environment would be increased. *Id.*

The IHSA itself contains no civil penalty provisions. Under the North Carolina Public Health Law, however, the State may impose civil administrative penalties of $10,000 per day for violating the IHSA, or any rule or order issued thereunder. N.C. Gen. Stat. §130A-22(a). In addition, the Public Health Law provides that anyone who violates Chapter 130A, of which the IHSA is a part, is guilty of a misdemeanor. N.C. Gen. Stat. §130A-25(a). The IHSA contains no treble damages provision for violating a cleanup order.

Liability The liability section in North Carolina's IHSA is similar to the federal CERCLA with one important exception. The statute defines a responsible party as any person who discharges, or who contracts, accepts or transports for discharge, any hazardous substance. N.C. Gen. Stat. §130A-310.7(a). Unlike CERCLA, the statute does not explicitly hold liable the owner of the site either at the present time or at the time of disposal. Confusing the question of whether the site owner is liable, however, is the statute's specific exemption from liability for an "innocent landowner". *Id.* In June 1989 the General Assembly added transporters to the list of liable parties and changed the wording slightly of the "innocent landowner's" exemption, but did nothing to resolve the issue of whether a knowledgeable site owner in North Carolina would be deemed a responsible party. No cases have yet been brought in North Carolina under IHSA. The North Carolina superfund program officials, however, have indicated that the State would pursue a site owner if necessary under the theory that the exemption would be unnecessary if the knowledgeable site owner was not held liable.

Although the statute does not explicitly provide for joint and several liability, it does make a RP liable for "any or all" of the reasonably necessary expenses of developing and implementing a remedial action program. The State interprets this language to authorize the imposition of joint and several liability.

The defenses to IHSA liability, which are similar to the federal CERCLA, include evidence that the contamination was caused by an act of God or war or an intentional act or omission of a third party who is not in any contractual relationship with the defendant.

Voluntary Participation The North Carolina statute encourages voluntary RP participation in the cleanup process in several ways. First, it requires the State "where possible" to seek RP cooperation prior to initiating a cleanup effort on its own.

Second, the statute limits the liability of RPs who voluntarily participate in the implementation of a remedial action plan to $3 million. N.C. Gen. Stat. §130A-310.9(a). This limitation applies only to the cost of implementation, including construction, not to the cost of developing the plan. *Id.* Although the liability cap may induce voluntary RP action, the cap could potentially also have a negative effect on the quality of the cleanup and on state resources. For example, if an RP-financed remedial action reaches a cost of $3 million with only three-quarters of the cleanup performed, the RP may stop work, requiring the state either to complete the action or to leave the cleanup undone. Given the limited funding for state actions, knowledge of the cap could influence the type of remedy chosen. State program officials anticipate, however, that those sites for which implementation costs exceed $3 million will be eligible for the NPL, with liable parties being responsible for the full cost of cleanup. It is somewhat questionable, however, whether a $3 million state site can be presumed to be eligible for NPL placement. The average remedial action cost for an NPL site is now more than $10 million, and it is projected that this figure will increase in the near future. States have also reported steadily increasing remedial action costs.[1] Moreover, the North Carolina statutory cap does not include an inflation factor that will account for a future rise in remediation costs.

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1. A study prepared by the Oregon superfund program on the average cost of remedial action in four states reports average costs ranging from $3.5 million to $15 million per site. (States studied were Oregon, New Jersey, Michigan, and Minnesota.)

Third, the statute exempts voluntary actions from most of the stringent public participation provisions, except that the State shall provide notification of the proposed action to those persons who have requested such notice in advance. N.C. Gen. Stat. §130A-310.9(b). Sites undergoing voluntary remedial actions are not included on the State Priority List. *Id.*

Deed Recordation Whenever the State has determined the existence and location of a site, it may prepare a "Notice of Inactive Hazardous Substance or Waste Disposal Site" for recordation in the register of deeds office of the county in which the land is located. If the site is sold or leased, the deed of transfer shall contain a reference to the Notice. N.C. Gen. Stat. §130A-310.8. Cancellation of the Notice may only be made by the State after the hazards have been eliminated. *Id.* The North Carolina Superfund Section has completed seven deed recordation documents to date for filing with the register. The notices for these properties contain detailed descriptions of the type, location and quantity of hazardous substances on the property. The superfund officials are hopeful that this deed recordation authority will become an important tool in encouraging voluntary RP cleanups so that the Notice may be removed from the deed.

Public Participation North Carolina's superfund statute contains extensive provisions for public participation in the development of the remedial action plan. N.C. Gen. Stat. §130A-310.4. Before approval of the plan for state-funded cleanup actions, copies of it must be made available to the public at libraries and other locations and notice must be given for three weeks in the local newspapers. The State must allow 45 days from the last notice for receipt of public comment before the plan may be deemed approved. If there is significant public interest in the plan, a public hearing must be held. *Id.* As noted previously, the development of remedial plans by RPs on a voluntary basis are exempt from most of the public participation requirements.

Solid and Hazardous Waste Management Act

The Solid and Hazardous Waste Management Act authorizes the Department to develop and implement an emergency hazardous waste remedial plan for hazardous waste

discharges, using monies from the Emergency Response Fund (Emergency Fund). N.C. Gen. Stat. §130A-306. The Hazardous Waste Section administers this fund and also oversees the state RCRA program. The Emergency Fund may be used for emergency removal only if no funds are available from other sources, such as federal EPA. *Id.*

Oil Pollution and Hazardous Substances Control Act

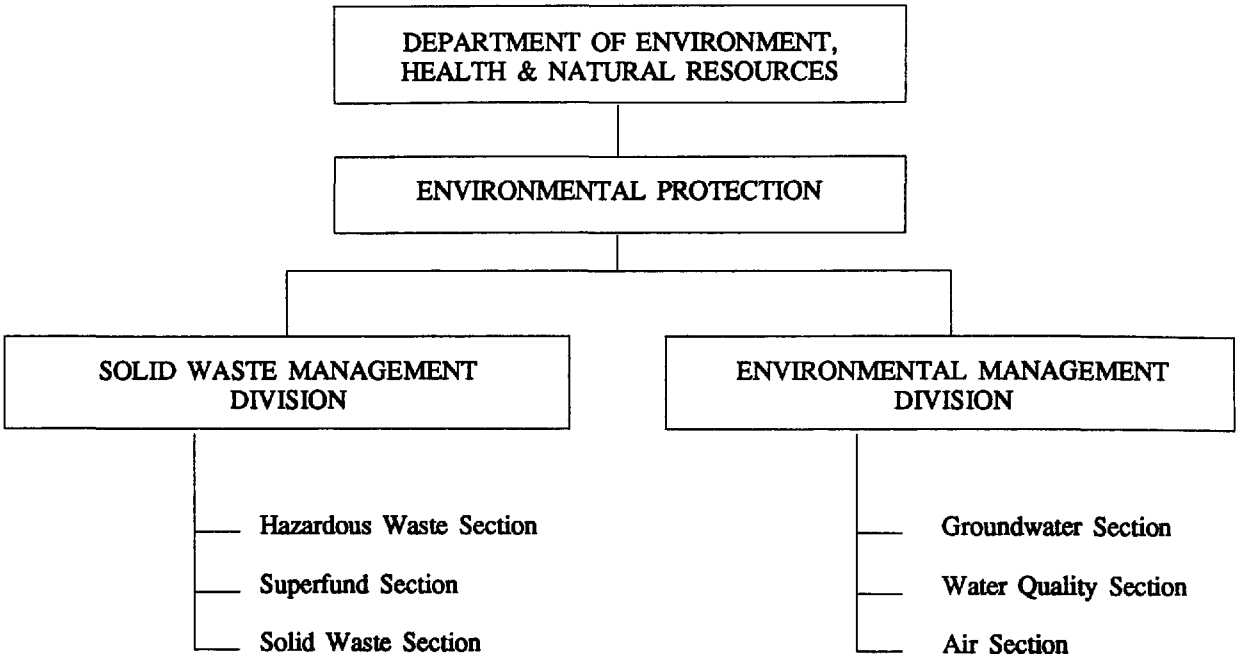
The Oil Pollution and Hazardous Substances Control Act of 1978, N.C. Gen. Stat. §§143-215.75 through -215.104, prohibits the discharge of oil or other hazardous substances into the water or lands of the State. It requires any person having control over oil or other hazardous substances discharged into land or water to take immediate removal action and to restore the area. N.C. Gen. Stat. §143-215.84. Before seeking corrective action, however, the State must identify the owner or operator in control of the hazardous substance at the time of the release. The act, therefore, has limited use for the cleanup of inactive hazardous waste sites where the date of release may be uncertain. The act authorizes two separate funds that may be used for cleanup activities: the Oil or Other Hazardous Substances Pollution Protection Fund (Oil Spill Fund) and the Leaking Underground Petroleum Storage Tank Fund (LUPST Fund). These funds are administered by the Groundwater and Water Quality Sections of the Environmental Management Division.

III. PROGRAM ORGANIZATION

The Superfund Section, which is located within the Solid Waste Management Division, is responsible for the State inactive hazardous sites cleanup program, administers the Cleanup Fund, and oversees State participation in Federal remedial actions. The Superfund Section is located in the new Department of Environment, Health, and Natural Resources (DEHNR), which was created by the General Assembly in August 1989 in an effort to consolidate the State's environmental programs. This reorganization means that the superfund and hazardous waste programs, which were previously in the Department of Human Resources, are now in the same department as the air, water quality, and groundwater programs. See Figure NC-1. This consolidation should provide for easier and better coordination among the state environmental programs. Prior to the reorganization, the

Commission of Health Services reviewed and adopted rules proposed by the Superfund Section under the IHSA, specifically the notification requirements and the prioritization rules. It is unclear at this point whether the Commission will retain this function following the reorganization.

FIGURE NC-1



The state Superfund Section currently consists of 20 employees, including support staff, with two vacancies. The legislature authorized two additional positions for FY 1989-90, which will be used to employ an environmental engineer and a toxicologist. The Section's operating budget is $318,000 for FY 89-90 and $411,000 for FY 90-91, derived from appropriations.

Most of the Superfund Section staff works on federal CERCLA matters. Only four employees are assigned to state superfund issues, three of whom work only part-time on state matters. Twelve positions in the Superfund Section are funded by an EPA cooperative grant for PA/SI work, and a CORE grant provides for one accounting position. One attorney and one secretary from the Attorney General's Office concentrate full-time on federal superfund issues, while an additional AG attorney works part-time on state superfund matters.

The State Inactive Hazardous Sites Act is designed to address only inactive sites in which hazardous waste discharge has occurred in the past. The IHSA exempts from the definition of a "site" within its jurisdiction those facilities permitted or in interim status under the State's RCRA program. According to Department policy, if there is evidence of disposal after November 1980, the State's RCRA program will handle the case. A non-notifier or illegal disposer will be brought into the RCRA program and will be required to obtain a post-closure permit. If a RCRA facility becomes bankrupt, however, it will then come under the jurisdiction of the state Superfund Section.

The Hazardous Waste Section, also located within the Solid Waste Management Division, administers the state RCRA program and the Emergency Response Fund. Generally, the Emergency Fund handles those removal actions that do not require significant sampling or funding. If an emergency situation arises, the heads of the Superfund Section and the Hazardous Waste Section confer and decide which program will handle the problem.

The Hazardous Waste Section has 54 staffers with an additional five recently authorized by the legislature. Thirty percent of its budget is derived from RCRA fees, 20% from appropriated funds, and 50% from federal grants.

The Groundwater and Water Quality Sections are located within the Division of Environmental Management and have responsibility for developing, implementing and enforcing water and groundwater quality standards in the state. If the Superfund Section discovers groundwater contamination at a site, the Groundwater Section will review the remedial action plan for adherence to the appropriate groundwater standards. The Division of Environmental Management often refers hazardous waste sites to the Superfund or Hazardous Waste sections, and uses a standard form to alert the sections to a potential superfund or RCRA site. According to Superfund Section officials, this transfer procedure has worked smoothly in the past, and should continue to do so under the reorganization.

IV. FUNDING

The North Carolina General Assembly sees the State superfund program as additive to the Federal one, not as a partial replacement. The State relies heavily on the federal

government for staff funding, as described above, and has provided only nominal amounts to the State Cleanup Fund.

Inactive Hazardous Sites Cleanup Fund

The Inactive Hazardous Sites Cleanup Fund (Cleanup Fund) is a nonreverting special trust fund consisting of monies appropriated to it by the legislature or available to it from grants, fees, or cost recoveries. In the 1989 amendments, the legislature allowed the fund to be credited with interest. In addition, the amendment now allows money in the Emergency Response Fund (which is funded by RCRA penalties) in excess of $500,000 to be deposited into the Cleanup Fund. To date the Cleanup Fund has only received monies from the General Assembly from appropriations totaling $600,000 for fiscal years 1987-89. The General Assembly appropriated no money for the Cleanup Fund for FY 89-90.

After expenditures for one state-lead cleanup, the Cleanup Fund now contains $256,000. Excess monies from the Emergency Fund may begin to flow into the Cleanup Fund as early as next year as RCRA penalties of about $160,000 a year may push the Emergency Fund total above its $500,000 cap. This funding cannot be viewed as significant or constant, however.

The 1989 General Assembly commissioned the Governor's Waste Management Board to study funding mechanisms for the Cleanup Fund, particularly those used for similar programs in other states. After considering twelve possible funding mechanisms, including various taxes, fees, and general obligation bonds, the Board concluded in its report to the legislature that general appropriations was the most acceptable method for Fund financing.[2] The Board rejected fees on hazardous waste facilities as a funding source because there are so few in the state and fees on those facilities currently fund the state's RCRA program. The legislature recently lifted a ban on the construction of hazardous waste facilities in the state, however, and the Board noted that if more facilities were located in North Carolina, this type of fee could be a future source of funding. The Board rejected the use of general obligation bonds as a funding mechanism because the projected

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2. Governor's Waste Management Board, Funding Needs and Funding Mechanisms for State Inactive Sites and Superfund Programs and Related Recommendations (June 15, 1989).

program budget was too small to warrant the substantial administrative costs that would be incurred. Based on the current staffing levels that would allow only five site cleanups per year, the Board estimated that $5 million per year would be needed in the short term for combined state and federal cleanups. The Board determined that this amount was too small for bonds to be issued. Although the Board concluded that funding requirements should be met through legislative appropriations in the short term, it recommended that a fuller analysis of alternatives be conducted for the next legislative session.

There is a strong feeling in the General Assembly that all monies expended by the State should be controlled, and therefore appropriated, by the legislature. Thus, in the foreseeable future, it is doubtful North Carolina will implement any type of self-sustaining funding method. Moreover, because of the legislature's desire to rely on voluntary cleanups, it is not likely to appropriate large amounts to the Cleanup Fund, except for specific emergency actions.

Emergency Response Fund

The Emergency Response Fund (Emergency Fund), administered by the Hazardous Waste Section, Division of Solid Waste Management, is also a special trust fund credited with interest. The monies in the Emergency Fund may not be used unless the Department determines that sufficient funds for corrective action cannot be obtained from other sources without delay, significantly increasing risk to the public health or the environment. The Emergency Fund has been used only twice. One reason for the infrequency of its use is the Department's interpretation that the Emergency Fund cannot be used unless there is no money available elsewhere to effect the cleanup. According to program officials, whenever an emergency arises that might warrant use of the Emergency Fund, EPA generally can be persuaded to perform the cleanup under CERCLA, even though it may take up to two years before EPA acts. State officials also are reluctant to utilize the Emergency Fund because they must go through detailed state contracting procedures for each cleanup, no matter how small the removal action. The Hazardous Waste Management Section is currently attempting to obtain an annual contract so that small removal cases may be performed more quickly. The Emergency Fund contained approximately $360,000 as of August 29, 1989.

Oil or Other Hazardous Substance Pollution Protection Fund (Oil Spill Fund) and Leaking Underground Petroleum Storage Tank Funds (LUPST Funds)

The Oil or Other Hazardous Substances Pollution Protection Fund (Oil Spill Fund) may be used for the removal of oil or other hazardous substances discharged into the land or waters. It is funded by fines and contains approximately $100,000. It has rarely, if ever, been used because of the burden of proof required for recovery of costs, and because of the limited funding.

There are two LUPST Funds: a commercial one containing $3-4 million funded by fees, and a non-commercial one containing $4 million funded by a kerosene tax. If a petroleum substance is released from an underground storage tank, the owners are liable for the first $50,000 of cleanup costs, at which time the commercial Fund will then expend up to $950,000 on cleanup. The sum of payments made by the owner and by the Fund shall not exceed one million dollars per discharge or release. The state looks to the federal trust fund for expenditures over $1 million. These state funds are limited to use on petroleum releases from underground tanks.

V. REMEDIATION PROCESS

Information Gathering and Prioritization

Since 1987 the efforts of the State superfund program have concentrated on determining the number and status of North Carolina inactive hazardous waste sites. The first duty required by the Inactive Hazardous Sites Law after enactment was the development of a program for locating all inactive hazardous substance sites in North Carolina and the compilation of an inventory of such sites based in part on information submitted by owners, operators and responsible parties. Responding to this mandate, the Superfund Section sent out approximately 800 information requests to potentially responsible parties, but received only 150-200 responses, many of which were incomplete. Thus, most of the information on sites used in developing the State Inventory and Priority List has come from the State's RCRA files or from the federal preliminary assessment/site investigations (PA/SIs).

Under a cooperative agreement with EPA since 1985, the Superfund Section has performed all but about 25 preliminary assessments and nearly 200 of the site investigations for approximately 800 North Carolina sites on the Comprehensive Environmental Response Compensation and Liability Inventory System (CERCLIS). For those sites likely to be listed on the NPL, EPA Region IV Field Investigations Teams (FITs) perform "listing site investigations" using HRS II criteria. The State demands that the FIT notify the state Superfund Section and the proper local agencies when performing the SI, and encourages the FIT to look at the State's files before starting.

The state superfund statute also mandated that the Superfund Section prepare a prioritization system in order to compile a State Priority List. North Carolina's prioritization system is modeled after the federal Hazard Ranking System, but is simpler to use and takes into account past cleanup actions when ranking the site. Contamination is confirmed if analyses show the presence of hazardous substances at concentrations significantly above background levels. The State evaluates a site and assigns it a score for groundwater migration, surface water migration, air migration and direct contact. The site is prioritized based on conditions present at the time of evaluation; the State takes into consideration all past cleanup efforts in determining the priority ranking.

The first State Inactive Hazardous Sites Inventory was presented to the legislature in May 1989.[3] The eighty-five (85) sites on the State Priority List (SPL), which is a part of the Inventory, include sites with laboratory data confirming hazardous substance contamination, sites with known disposal but no laboratory data, and sites with alleged disposal.

The State has identified thirteen sites on the SPL as either requiring or possibly requiring state fund cleanups because of the absence of a viable responsible party. Four of those sites are former battery recycling operations involving lead contamination; others include a fly ash disposal site, an aluminum recycling operation, a wood preserving operation, an industrial waste reprocessing facility, and sites with pesticide contamination. The program has developed remedial action cost estimates for nine of these sites, with a

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3. Department of Human Resources, Annual Report to the North Carolina General Assembly--Inactive Hazardous Sites Program (May 1989).

combined cost estimate ranging from $5.4 million to $7.4 million.

Besides the SPL, the State Inventory also contains a separate list of approximately 600 sites for which additional data is required before their priority status can be determined. Site investigations are pending on these 600 locations, the majority of which involve chemical production, distribution, and recovery processes; landfill operations; and plating/polishing operations.

Sites at which voluntary cleanup actions or RP-financed remedial investigations have begun are listed separately on the State Inventory and are not included in the Priority List.

State-funded Removal Action

The only state-funded removal action performed by North Carolina using the Cleanup Fund was at the Ulah Battery Lead Reclamation site. The site was used as a battery recycling facility from 1965-1981, a process which involves crushing the batteries and removing and melting the lead plates. Soil samples at the site showed elevated lead levels, and medical authorities diagnosed one child residing in the area as having lead poisoning. In June 1988 the State issued a written declaration of endangerment and notified the RPs of their potential liability and of the State's intent to spend public funds to clean up the site. Following the public participation requirements in the statute, the State provided public notice and held a public meeting in July 1988 on the proposed remedial plan. In the fall of 1988, the State removed 2000 tons of contaminated soil and battery casing chips from part of the site at a cost of $344,000. Two piles of crushed battery casings remain, however, and the site will now be reevaluated for reordering on the SPL. Although the State is preparing documentation of cleanup costs, recovery of State expenditures may be difficult due to the financial status of the RPs.

Voluntary Responsible Party Participation

When the State Inventory was published in May 1989, six responsible parties were in various stages of initiating voluntary cleanups under supervision of the State, two of which had started actual cleanup. Since publication of the Inventory, several more potentially responsible parties whose sites were listed have contacted the superfund program with an interest in voluntary cleanup or in submitting further information that would take

the site off the State Inventory. The State sees publication of the SPL as a major motivator for these companies to come forward because of the public relations impact. The lack of present enforcement capabilities by default makes public relations pressures the best influence North Carolina has to facilitate voluntary actions. At present, the Superfund Section is fully occupied in negotiations with about 25 companies to reach agreements on site investigations or voluntary cleanups. It is too early to tell how many of these negotiations will result in actual cleanups.

To date the State has concluded two "administrative orders on consent" with companies to perform voluntary cleanup actions at two different sites. The consent agreements require the companies to prepare a remedial investigation plan, determine a cleanup level, complete a feasibility study, and implement the approved plan. The State operates in an advisory capacity. The agreements do not contain stipulated penalties. Upon an irreconcilable dispute between the State and the party, the consent agreement dissolves. In signing the consent agreement, the State is not guaranteeing the company that the site will be taken off the CERCLIS list or that EPA will not seek further cleanup. However, once the State and the party agree upon cleanup levels, and the company implements the plan, the State assures the company of its support in any discussion with EPA should EPA ever question the level of cleanup or propose that the site be placed on the NPL. If the company refuses to comply with the State's cleanup level requirements, but continues cleanup efforts, the State will not support the company's actions should the site later be listed on the NPL.

The State sees this type of consent agreement as an encouragement to RPs to work with the State on a voluntary basis. These agreements have only recently been concluded; thus it is unknown whether the RPs' commitment to cleanup efforts will be affected by the potential problems with enforcing the agreement. State officials have indicated they intend to pursue enforcement should problems occur.

Cleanup Standards

Cleanup standards for a remedial action in North Carolina are determined on a case by case basis. The state Superfund Section is currently working on guidelines for standards of cleanup based on the use of the property. Although the State seeks a cleanup

level most protective of health and the environment, in some cases the State may accept an RP's justifications for a slightly less stringent standard if the site is used as an industrial park, away from residential areas, or is extremely isolated. The State's aim is to achieve some RP cleanup in the short term that otherwise would not be performed.

State groundwater standards developed by the Groundwater Section of the Division of Environmental Management have been adopted, effective August 1, 1989. Although the state statute requires the Superfund Section to "seek federal approval" of a remedial action "to insure concurrent compliance with federal standards", program officials see this as little more than a requirement to use federal standards as a guideline. N.C. Gen. Stat. §130A-310.3(d).

Federal Cleanups

North Carolina has 20 sites on the NPL with 2 additional sites proposed. One North Carolina site, involving PCB contamination (PCB, Roadside Spills), has been remediated and removed from the NPL. The State is now in the process of negotiating with Region IV on state superfund contracts for federal cleanup at two North Carolina NPL sites. These state contracts cover issues such as the State's capacity assurance, ten percent share, and assurance of state permits and authorizations. The 1989 amendment to the Inactive Hazardous Sites Law gave specific authorization for the state program to enter into these agreements with the federal government. The legislature also authorized $800,000 per year for FY 1989-91 for the state's ten percent share of the CERCLA cleanup at the two sites for which state contracts are being negotiated. Program officials are confident that they will be provided additional funds from the legislature if needed to meet the CERCLA match.

VI. PROGRAM OUTLOOK

During its first two years, the North Carolina superfund program has made a good effort to determine the scope of the inactive hazardous waste sites problem in North Carolina. The State has prioritized 85 sites based on the extent to which such sites endanger health or environment. Preliminary assessments have been completed on most of

the sites identified by the State and site investigations are progressing. Thus, the State has a good grasp of its hazardous waste problem.

The North Carolina General Assembly, however, has provided little in the way of funding for the program. The limitations imposed by this lack of funding for state cleanup activities have determined the focus and priorities of the North Carolina superfund program. Consequently, at present the program is concentrating on voluntary site investigations and cleanups by responsible parties rather than enforcement efforts. Since publication of the Inactive Hazardous Sites Inventory, several North Carolina companies have notified the State of their interest in performing site investigations or cleanups. The staff members working on state superfund issues are now fully occupied with oversight of these sites and with helping the companies with their voluntary remediation efforts.

The superfund program officials are aware, however, that at present only the financially viable and more environmentally responsible companies are coming forward. Once these voluntary efforts begin to dwindle, the ability of the superfund program to continue cleanup efforts will depend on the resources provided it by the General Assembly. At this time the state legislature is not willing to appropriate large sums of money for state-funded cleanups, although it is willing to provide the state share for federal remedial efforts. The program officials believe that over the next five years, once it establishes a track record of RP-financed cleanups that will show the program's credibility and technical ability, then the General Assembly will be more willing to appropriate the funds necessary for enforcement actions. Only time will tell whether this hope will become a reality.

OREGON

OVERVIEW

Oregon's hazardous waste cleanup program is only two years old and is continuing to evolve. The State's regulations are largely in place and it has been conducting oversight of RI/FSs performed by RPs; the program's next steps are to prepare a complete list of sites, continue oversight, and begin State-lead cleanup efforts.

Oregon has only eight sites on the NPL, six final and two proposed. Although its Department of Environmental Quality (DEQ) is tracking 750 sites in which there are over 300 confirmed releases, on average these sites are relatively small and are expected to be less costly to clean up than sites in other states.

Involving Responsible Parties Providing oversight for RP-conducted RI/FSs has been the focus of the DEQ's site response efforts, although the State intends to conduct one RD and take the lead on five RI/FSs at orphan sites in the next two years. In general, the program has succeeded in eliciting RP participation, particularly in conducting the RI/FS. RPs are encouraged to participate by DEQ's strong enforcement authorities, including the threat of triple damages, and possibly by the relatively small cost of cleaning up Oregon non-NPL sites.

RPs may, however, become less likely to conduct actions once sites reach the remedial design and remedial action (RD/RA) phase. Factors that might discourage RPs from full participation include Oregon's strict cleanup level standards and the existence of fewer RPs than in other states because generators and transporters are usually not considered liable in Oregon. Both of these factors would tend to make cleanups more expensive, and less attractive, for the participating RPs.

Funding for Oregon's superfund program comes almost entirely from fees. The Hazardous Substance Remedial Action Fund (HSRAF), which is used for most program activities, received 21.6% of its funds from Federal Superfund grants in 1987-89 but will probably receive only 6% from that source in 1989-91 because of reduced State involvement at NPL sites. Most of the rest of the Fund's money comes from a fee on operators of hazardous waste and PCB disposal facilities, of which there is only one in the State.

Within the HSRAF, an Orphan Site Account is funded by bonds, and the bond debt is serviced by fees on hazardous substances, petroleum, and solid waste disposal. Twenty-five percent of this account may be used at sites with unwilling RPs, and the rest may be used only at sites with unknown or unviable RPs. The account may suffer from caps placed on two of the three fees, and from a requirement that all three fees generate the same amount of revenue. The reliance on fees for most of the Program's funds may prove problematic, as income from most of the fees is likely to decline over time.

Program Innovations Under DEQ's Voluntary Preliminary Assessment (PA) Program, RPs can expedite the PA process at sites that DEQ considers low priority. The RP prepares a series of three PA reports, giving DEQ the option after each report to decide that no further action is needed or to require the preparation of the next report. This process allows RPs who wish to transfer property or engage in mergers to obtain a swift DEQ judgment on the status of hazardous waste sites on their property.

The Site Response Section of the DEQ's Environmental Cleanup Division has a unique organizational system whereby project managers spend 60% of their time managing their own sites, 10% of their time training, and 30% of their time providing consultation for other managers' sites. This system allows project managers time to maintain their technical expertise and allows other managers relatively easy access to that expertise.

I. INTRODUCTION

Oregon's environmental cleanup program was established by the legislature in 1987. The creation of the cleanup program was motivated by the State's commitment to mitigate environmental and health risks at all contaminated sites. In addition, the State recognized that very few of Oregon's three hundred plus confirmed releases would score high enough to be included on the National Priority List (NPL), but they would nevertheless require attention using state oversight and/or funding.

Before passage of the Environmental Cleanup Law, Superfund activities were carried out by the Remedial Action Section in the Hazardous and Solid Waste Division of the Oregon Department of Environmental Quality (DEQ) with funding provided by a $20 per ton hazardous waste disposal fee and EPA Management Assistance Grants. The Remedial Action Section continued in this role until July 1988 when it was expanded and reorganized as the Environmental Cleanup Division (ECD).

The Hazardous Waste Problem in Oregon

The State has a variety of hazardous waste sites associated with transportation, manufacturing, and electronics. Currently, there are 750 sites in DEQ's data base and over 300 confirmed releases. The distribution of confirmed releases by type of business is presented in Table OR-1.[1]

There are six sites on the final NPL and two sites proposed for the NPL.[2] Table OR-2 provides information on the status of these eight NPL sites.[3]

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1. The number of confirmed releases was originally 325, later revised downward to 313.

2. U.S. Environmental Protection Agency, Office of Emergency & Remedial Response, National Priority List, Supplemental Lists and Supporting Materials, HW-10.115 (October 1989).

3. The eighth site--Union Pacific Railroad Tie Treatment in The Dalles, Oregon--was proposed after the ECD compiled information for the table. The ECD has negotiated a consent order with the RPs but the site may revert to EPA project lead or oversight if the site is added to the NPL.

TABLE OR-1
Confirmed Releases by Type of Business

Type of Business	Number of Sites
Wholesale/Retail Sales	60*
Transportation	55
Wood Products	50
Metal Manufacturing	47
Chemical Manufacturing	31
Services	21
Electronics	13
Other	48
	325

* Leaking underground storage tanks

Oregon non-NPL sites are expected to be less costly to clean up in comparison to NPL sites generally, or non-NPL sites in states such as New Jersey, Michigan, and Minnesota. Historically there has been little off-site hazardous waste disposal activity in Oregon because Oregon is less industrialized than these states. The ECD estimates that remedial action costs for Oregon non-NPL sites will range from $250K to $10M and average $3.5M. By comparison, the average cost of remedial actions at NPL sites nationwide is $13.5M.[4] New Jersey sites average $15M, Michigan sites average $5M, and Minnesota RA costs range from $3M to $7M.[5]

The state anticipates that the burden of funding and conducting cleanups will fall on the ECD for a number of sites. Of the 325 sites with confirmed releases investigated to date, the ECD has determined that there are approximately 14 true orphan sites and 42 sites at which RPs have limited ability to pay for cleanup.

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4. Oregon Department of Environmental Quality, Report on Funding the Oregon Environmental Cleanup Program: 1989 Legislative Session (August 30, 1989).

5. *Ibid.*

TABLE OR-2
Federal NPL Sites in Oregon

Site	Status	Cleanup Cost	Project Lead
Allied Plating (Proposed)	RI/FS	Unknown	EPA
Gould Battery	ROD	$20M	RP
Joseph Forest Products	RI/FS	Unknown	EPA
Martin Marietta	RD	$6.7M	RP
Teledyne Wah Chang	RI/FS	Unknown	RP
Umatilla Army Depot	RI/FS	Unknown	RP
United Chrome Products	RA	$7M	EPA
Union Pacific Railroad (Proposed)	RI/FS	Unknown	State

Program Accomplishments

The cleanup program's superfund activities can be divided into three areas: (1) development of regulations and policies; (2) site discovery; and (3) site response.

ECD has developed the regulations required by statute to carry out its functions with the exception of new rules required because of recent amendments to the statute. ECD is also developing new guidance for preparing PA/SIs and for allowing RPs to conduct PAs at certain sites.[6]

The program's major setback to date has been the initial effort to identify sites for listing on the inventory of facilities with confirmed releases. This listing effort was stymied because owners contested 210 of the proposed 325 sites. The old "inventory" has been abandoned by new legislation that will enable the ECD to put the listing effort back on track.

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6. The ECD is developing a three-tiered system to screen sites for ECD-conducted PAs. The program anticipates that RPs will volunteer to conduct PAs at low and medium priority sites (that ECD doesn't plan to address immediately) although the guidance doesn't preclude RP-conducted PAs at high priority sites.

At least for the next few years, ECD expects to discover approximately 50 sites per year and projects that the database of discovered sites will increase to approximately 1,000 sites. ECD plans to conduct 144 PA/SIs during the current biennium (89-91) and projects that 326 PA/SIs will be completed during the 91-93 biennium. The program expects it will take 6 to 8 years to complete PAs on discovered sites.

New site response projects have recently been increasing at a rate of three new projects per month. With this rate of growth, an estimated 116 projects would be underway by the end of the current biennium. However, ECD anticipates that limited staff resources will only allow the division to undertake about 40-45 projects at one time. Most of the program's recent site response activities (87-89 biennium) have focused on oversight of RI/FSs conducted by RPs. Recent and planned site response projects are:

- 87-89 biennium - oversight for 10 PRP-lead RI/FS and one imminent hazard removal.
- 89-91 biennium - oversight for 22 PRP projects including 3 RAs, State lead on RI/FS at 5 orphan sites and 1 RD at an orphan site.
- 91-93 biennium - oversight on 27 RP projects (5 RAs), State lead on 9 RI/FS, 3 RD, and 3 RA projects at orphan sites.

II. STATUTORY PROVISIONS

The Oregon Environmental Cleanup Law, Or. Rev. Stats. §§466.540 - .590 was established in 1987. The Cleanup Law creates the Hazardous Substance Remedial Action Fund (HSRAF) and outlines procedures for executing fund-lead and RP-lead cleanups. In the recently concluded 1989 legislative session, significant amendments to the Cleanup Law were made. In particular, these amendments revised the site inventory process and enhanced the program's ability to address orphan sites.

The Cleanup Law is modeled after the federal statute and provides similar cleanup standards and enforcement, settlement, and cost recovery authorities. The major difference between the Oregon statute and CERCLA is the scope of private parties' liability for

cleanups. Not surprisingly, there are also differences in site inventory and funding provisions. A few of the statutory provisions are highlighted below.

Liability

The Oregon law establishes strict liability (§466.567) instead of strict, joint and several liability specified in CERCLA §107(a). The strict liability standard applies to first owners or operators, knowledgeable subsequent owners or operators, secretive sellers, bad actors, and unlawfully hindering persons. It is DEQ's intention that common law principles be applied to determine whether strictly liable parties are also jointly and severally liable. If the harm cannot be apportioned, then joint and several liability applies. There are liability exclusions for unknowing subsequent owners and operators, migration victims, third party victims, inheritors, and units of local or state government that acquire property involuntarily. In certain instances where a person has failed to notify DEQ, exercise due care, or take reasonable precautions, he or she may be subject to non-strict and several liability.

Enforcement, Settlement, and Cost Recovery

The Cleanup Law authorizes information and site access orders, administrative orders, and injunctive action. The statute provides for civil penalties of up to $10,000 per day for failure to comply with the law, regulations, or orders. Criminal penalties of up to $10,000 per day and/or imprisonment of not more than one year may apply for willful or knowing noncompliance with the law, regulations, or orders.

The statute also provides settlement authority. The director of DEQ is authorized to enter into agreements with RPs to perform removal or remedial actions. The director's decision to use (or not use) settlement authority cannot be appealed to the EQC and is not subject to judicial review. The director of DEQ may, when practicable and in the public interest, reach settlements with *de minimis* RPs.

The statute includes provisions for cost recovery and, in fact, requires the State to do so. Punitive damages of up to treble the amount of the State's costs may be assessed against RPs who fail <u>without</u> <u>sufficient</u> <u>cause</u> to conduct a removal or remedial action

required by administrative order. All of the State's remedial action costs, penalties, and punitive damages constitute a lien on real or personal property owned by liable parties.

Cleanup Policies

The cleanup standards contained in §466.553(2) are essentially the same as those in §121(b) of CERCLA as amended by SARA.

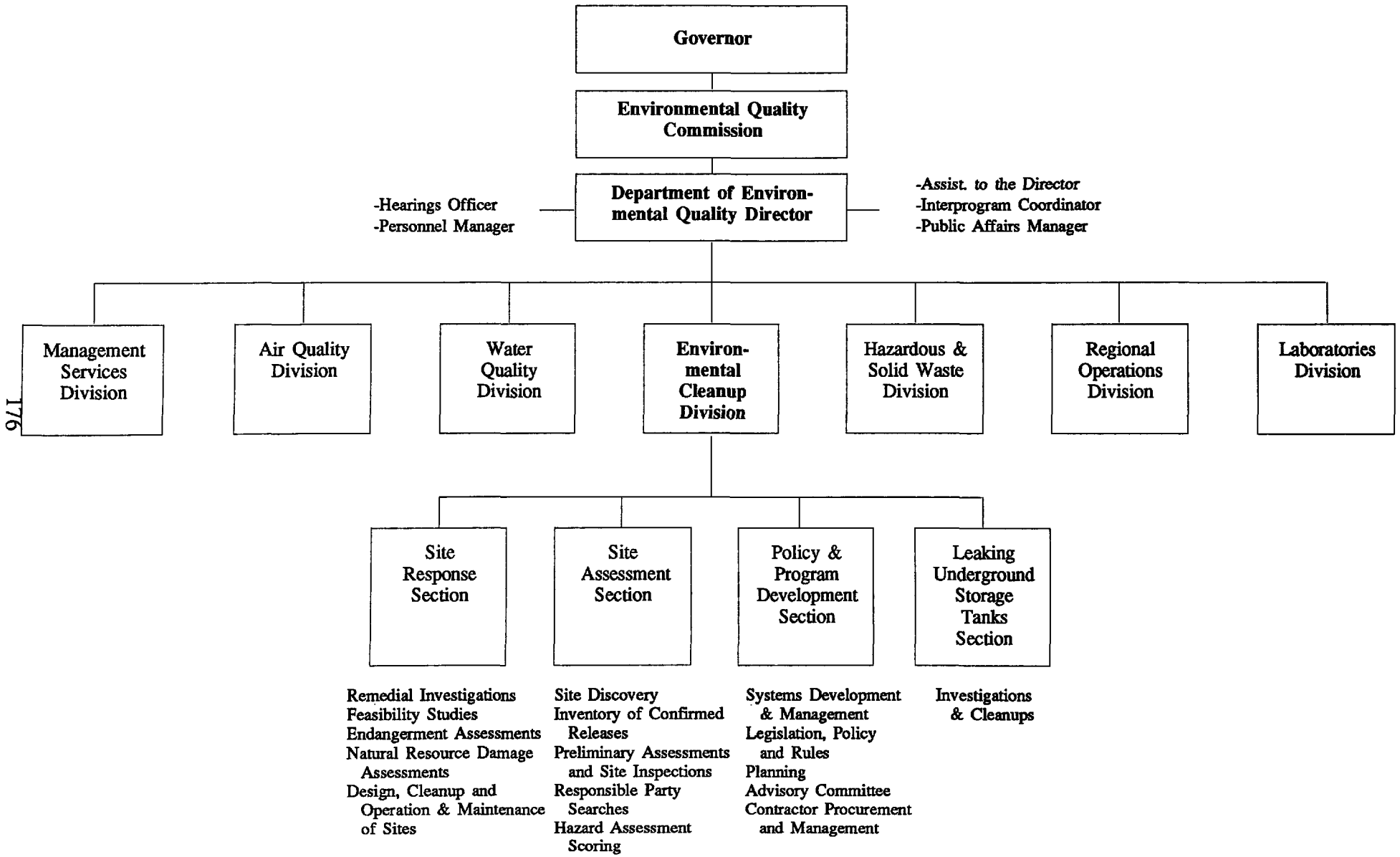
The Hazardous Substance Remedial Action Fund (HSRAF)

The Oregon Cleanup Law also established the HSRAF to finance staff positions and program costs and enable the ECD to undertake studies and cleanup activities at orphan sites and sites where RPs are unwilling to conduct these activities. During the 87-89 biennium, the Fund was financed primarily by a monthly fee of $20/ton of hazardous wastes or PCBs levied on operators of treatment and disposal facilities (only one in state). House Bill 3515, passed in 1989, establishes the Orphan Site Account within the Fund, financed by three new fees (see Section IV).

III. PROGRAM ORGANIZATION

The ECD is one of seven divisions within the DEQ and is primarily responsible for administering the State's superfund program (see Figure OR-1). It is divided into four sections, three of these devoted to superfund activities: the Site Assessment Section, the Site Response Section, and the Policy and Program Development Section. In addition, the ECD is assisted by other divisions within DEQ, the State AG's office, and the Environmental Quality Commission.

FIGURE OR-1. ENVIRONMENTAL CLEANUP DIVISION ORGANIZATION CHART



Superfund Capabilities in ECD

The **Site Assessment Section** carries out various "pre-remedial" activities including site discovery and listing, preliminary assessments and site inspections, and RP searches. The Site Assessment Section is also required to determine hazard assessment scores. The section includes 8 permanent staff and 2 limited duration staff. The bulk of the Section's work is preparation of PAs. They are currently developing a process that would allow RPs to conduct PAs with ECD oversight primarily at low priority sites (minimal off-site migration of contaminants).

The **Site Response Section** is responsible for oversight and management of RI/FS, endangerment assessments, natural resource damage assessments, and remedial design, cleanup, and operation and maintenance of superfund sites. There are 9 permanent staff and 1 limited duration person who works on special projects. The Site Response Section is also responsible for emergency removals at state superfund sites.

The **Policy and Program Development Section** is responsible for systems development and management, contractor procurement, policy development, and planning. The five permanent staff include the section chief, a policy analyst, a contracts person, and two program coordinators--one who works on the ECD budget and file management and one who helps develop ECD policies and procedures.

Superfund Program Support Services

ECD's superfund activities are supported by staff in three divisions within DEQ: (1) Management Services, (2) Laboratories, and (3) Regional Operations Divisions of DEQ. Also, two attorneys in the Attorney General's office devote a portion of their time to ECD, handling enforcement actions and providing advice upon request. The enforcement section within the Regional Operations Division may also be involved if the DEQ director issues a unilateral order to an RP.

Federal/State Relationships

The ECD has made use of the various grant monies available through the federal Superfund program. The program received management assistance funds for oversight and PA/SI funds for the state's NPL sites through a multi-site Cooperative Agreement. The

ECD also obtained a CORE grant in FY88. A draft SMOA, prepared by the Region X office in Portland, has been reviewed and revised by ECD and is currently under review. The ECD has a good working relationship with the Region, which has Superfund staff in Portland and in the Regional office in Seattle. ECD staff indicate that Region X has been particularly helpful on PRP searches.

Rule Development and Promulgation

The Environmental Quality Commission (EQC) is empowered to adopt rules necessary to carry out the provisions of the Cleanup Law as well as other DEQ laws, and to hear contested cases. The EQC consists of five members appointed by the governor to staggered terms. It meets once a month for approximately one and one-half days.

Proposed rules are developed by the ECD in consultation with an advisory committee and presented to the EQC for formal adoption. The first advisory committee was referred to as the Remedial Action Advisory Committee (RAAC). The RAAC has been replaced by the Environmental Cleanup Advisory Committee (ECAC). The ECAC is an ongoing committee consisting of 22 members and meets on a regular basis with the ECD in public meetings. The ECAC includes members from agriculture and timber, electronics, and the fuel industry, the financial and legal fields, and environmental groups. The overriding philosophy of rulemaking in ECD is to build consensus before presenting a rule to the EQC. As a result, the EQC has made only minor changes to proposed rules prior to promulgation.

Coordinating Site Cleanup Activities

The management of remedial activities by the Site Response Section is somewhat different from the approaches used by states such as Minnesota and New Jersey. Initially, a system of project managers was set up whereby project managers were responsible for all aspects of their assigned sites. However, project managers are usually expert in only one technical field and need to draw on the expertise of other staff in order to provide a competent technical review of the complex RI/FS report. Job satisfaction under this system was low and staff were often frustrated by the difficulty of negotiating time releases for staff to assist in reviews. The system was scrapped and replaced with one that provides

all site response staff with the opportunity to consult on other projects. Under the new system, staff devote 60% of their time to management of their own sites (usually 5-6 per person). 30% of their time is reserved for consultation on other projects. 10% of their time is reserved for training. The system makes it easier for project managers to coordinate reviews and oversight activities, and it allows staff to consult in their areas of expertise and keep up with new developments in their specialty. By design, the staff includes project managers with diverse backgrounds: a hydrogeologist, two engineers, two quality assurance/quality control experts, a bioremediation expert, a Ph.D analyst, and a project manager with strong management background. Changes in the site management approach may be required when sites have progressed to the remedial action stage, necessitating the assignment of project managers with engineering background to manage the RA itself.

IV. FUNDING

The Oregon cleanup program is financed primarily by monies deposited in the Hazardous Substance Remedial Action Fund (HSRAF). Federal Superfund grants provided 21.6% of funds for the cleanup program in the 87-89 biennium. The federal contribution is expected to drop to 6% during the current biennium because EPA, not ECD has lead responsibility on all but one NPL site. The HSRAF was created by the Oregon Environmental Cleanup Law and amended in 1989. It can be used for administrative support costs, emergency response actions and removals, studies and design, remedial action, O&M, and the State's CERCLA match. Private parties who perform cleanup activities pursuant to a DEQ order can seek reimbursement from the fund if they can demonstrate that they are not liable and the costs they incurred are reasonable.

During the 87-89 biennium, the primary source of income for the HSRAF was a monthly fee levied on operators of hazardous waste or PCB disposal facilities of $20/ton on any materials brought to the facility for treatment or disposal. Currently, there is only one hazardous waste disposal facility in Oregon (Arlington), receiving most of its waste from generators outside of Oregon. This facility pays $4.5-$5.0 million in fees per biennium. The other sources of income for the fund are cost recoveries, civil penalties,

and punitive damages. Cost recoveries are conservatively estimated to be $173,000 during the 89-91 biennium. Civil penalties are a minor source of income and punitive damages have not been assessed or collected by the program.

The Financial Assistance Program

The 1989 Amendments also created a Financial Assistance Program that enables ECD to loan HSRAF monies to RPs at negotiable interest rates and terms. However, the orphan site account may not be used for RP loans.

The Orphan Site Account

The 1989 Amendments also created the Orphan Site Account within the HSRAF. It is available to finance remedial activities at sites with RPs that are unknown, unable, or unwilling to conduct cleanup activities. To finance orphan site cleanups, DEQ would obtain authorization to sell pollution control general obligation bonds. Three new fees--a hazardous substance fee, a petroleum fee, and a solid waste tipping fee--are provided to service this bond debt. During the 89-91 biennium, debt service is the only authorized use of the fees; thereafter, they may be used directly to pay response contractors.

Several limitations have been placed on the use of the Orphan Site Account:

(1) the ECD must demonstrate its need to use the account and receive approval of the Emergency Legislative Board,[7]

(2) if RPs are "unwilling" as opposed to unknown or unable, the ECD must demonstrate that there is a need for "immediate" removal or remedial action to protect public health and the environment,

(3) only 25% of the account may be used at sites with "unwilling" RPs,

(4) a $1 million/year cap is placed on <u>each</u> of the three fees during the 89-91 biennium. After July 1991, the EQC may increase the fees provided they do not exceed the amount of site costs and the higher fees are approved by the Ways and Means Committee or the Emergency Legislative Board.

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7. It is not clear in the statute whether ECD is required to demonstrate "need" the first time or every time the Account is used.

As part of the approval process, the Emergency Legislative Board authorizes the ECD to use pollution control general obligation bonds to finance orphan site cleanups or provide loans that enable local governments or State agencies to conduct or finance cleanups. When ECD sells bonds, it must encumber annual fees amounting to approximately one-tenth the value of the bonds for a period of 20 years to ensure that the principle and interest can be repaid. The program faces one additional hurdle before the bonds can be used for superfund cleanups. Currently, the bonds can be used only for wastewater treatment facility construction and are not authorized for "moving dirt" without amending the State's constitution. Senate Joint Resolution 41 is the proposed constitutional amendment and will be voted on in Oregon's May 1990 primary election. The ECD does not anticipate that this delay will impede the site response program; the first orphan site project is not expected to start until mid-1990.

The hazardous substances fee is levied on the possession of hazardous substances (capped at $9,000 per facility and $25,000 per employer). The petroleum withdrawal or import delivery fee cannot exceed $10 per delivery. The solid waste tipping fee is the only uncapped fee and is levied on sites receiving domestic solid waste (excluding transfer stations). The hazardous substances and petroleum fees can only be used by ECD for cleanups at orphan sites that are not municipal solid waste facilities. The hazardous substances fee is also used for expenditures related to the Community Right to Know and Protection Act and the Toxics Use Reduction and Hazardous Waste Reduction Act. The petroleum fee is also used to finance the hazardous material emergency response system. The solid waste tipping fee has no per unit cap comparable to the facility or delivery caps placed on the hazardous substances and petroleum fees, respectively. It can be used only for cleanups at solid waste sites (orphan or owned/operated by the local government).

Once an orphan site determination is made for either a hazardous waste site or a solid waste facility, all three fees are triggered. It appears that once the fees are triggered, the fee rates must be set so that each fee generates exactly the same amount of revenue. Thus, twice as much fee revenue will be available for hazardous waste cleanups as for solid waste cleanups.

However, the 1989 Amendments provide for additional revenue for solid waste cleanups by creating the Local Government Remedial Action Fund. Unless local

governments make funds available from other sources, this fund would be available to pay their share of remedial action costs at solid waste sites. The fund would receive income from a solid waste collection services charge not to exceed $12 per capita per year or $60 per capita per local government unit.

Long Term Availability of Funds

Since the cleanup program relies almost exclusively on various types of fees, it is useful to focus on their revenue-generating potential. We would expect cost recoveries, penalties, and fines to provide limited potential to increase fund revenues significantly. The Environmental Cleanup Law authorizes the legislature to make direct appropriations to the program but the legislature has not opted to use this funding source in the last two legislative sessions.

The monthly hazardous waste disposal fee is set at $20/ton by statute. Fee revenue is proportional to the fee rate and the volume of hazardous waste disposed in Oregon. Clearly, revenue can be increased by increasing the fee rate (statutory amendment required). It should be noted that the fee rate is a "nominal" rate, and is not adjusted for inflation. Thus, other things being equal, the monthly fee will generate less revenue in real terms over time. The other component of fee revenue is the volume of hazardous waste disposed. Through May 1989, the monthly volume of waste and hence fee revenue has fluctuated from a high of over 30,000 tons in October 1987 to only 6,000 tons in March 1988. Nevertheless, ECD has analyzed monthly revenues and determined that fee revenue is increasing. However, two factors strongly suggest that the historical trend of increasing revenues will not continue in the future. First, the volume of waste will decline as a result of EPA regulations restricting the land disposal of certain hazardous wastes. Second, industry is using waste reduction and recycling techniques to avoid costs and potential liabilities associated with land disposal of hazardous waste. ECD is projecting a 10% reduction per year in fee revenue during the 89-91 biennium. A range of revenue projections for 89-91 is provided in Table OR-3. These projections are not adjusted for inflation. ECD has not made revenue projections for subsequent biennia. It seems reasonable to assume that revenue generated from the monthly fee will continue to decline after 1991.

TABLE OR-3
Revenue Projections 89-91

Methodology	Projected Revenue
Assume 10% reduction per year	$4,594,315
Assume same as 1987-1989	$5,773,344
Assume linear regression model (constant growth rate)	$6,786,950

The three fees used to finance the Orphan Site Account can potentially generate up to $1 million per year per fee during the 89-91 biennium. After 1991, the fee rates can be adjusted to meet the greater demands placed on the orphan site account. The revenue-generating potential of the hazardous substances and petroleum fees is limited by the caps stipulated in the 1989 Amendments. ECD does not yet know how close the fees will be set to these caps at this time. Also, it is not clear whether the caps can be removed after 1991 without amending the statute. The solid waste fee does not have a cap. However, it appears that its revenue-generating potential is limited by the requirement that each fee generate the same amount of income. The revenue-generating potential of all three fees also depends on the willingness of the Ways and Means Committee or the Emergency Board to approve future increases in the fee rates.

Overall, there is concern in ECD about adequate funds to meet projected demand for orphan site cleanups. ECD estimates it will need $18.8 million in the 91-93 biennium to meet its planned commitments. Given that the monthly hazardous waste disposal fee will generate only about one-fourth to one-third of the projected costs, the program will have to rely heavily on pollution control general obligation bonds to finance orphan site cleanups.

V. REMEDIATION PROCESS

Overview

The cleanup process in Oregon for non-NPL sites is similar to the procedures used by the federal Superfund program and by most State superfund programs. Sites enter the process at the site discovery stage. The ECD generates its site data base using information from DEQ files, files of other State agencies, concerned citizen reports, and information on targeted industries. Next, the preliminary assessment at a site provides the basis for determining whether (1) a release has occurred, (2) it poses a significant threat, and (3) further investigation is required. After the PA is completed, the site has one of three fates: (1) release is not confirmed; (2) release is confirmed and the site is proposed for inclusion on the State's confirmed release list; or (3) the site is also proposed for inclusion on the State's inventory of facilities requiring further action. This latter category of sites enter the remedial phase; removal action and/or remedial investigation and a feasibility study may be required. If an RI/FS is conducted for the site, the director of DEQ will select a remedial action (for an orphan site) or approve a remedial action proposed by the RP. The selection of the remedial action is followed by the remedial design and construction phases. Selected details of the cleanup process are discussed below.

Preliminary Assessments (PAs)

The PA process in Oregon is currently under revision. ECD is proposing use of a three-part process to replace its current PA/SI approach. ECD has developed the three-phased approach in an effort to conserve program funds and staff resources. It allows ECD to terminate PAs at some sites at lower cost than under the existing (and more traditional) PA approach. Guidance for the state-conducted PA is not available but is expected to be similar to the guidance developed for Oregon's fledgling voluntary PA program.

The voluntary PA program has been established to enable RPs to obtain "timely DEQ concurrence on a course of action that will identify whether further investigation and/or cleanup is required at a particular site." In anticipation of property transfer, corporate merger, or development, RPs may want to expedite the PA at sites that have low DEQ priority. ECD does not plan to defer PAs at sites with known or highly probable releases.

The voluntary PA is divided into three phases, with reports required at the completion of each phase. The first part of the PA process (PAI) entails an historical record search providing a description and history of the site and a characterization of wastes. The PA may be terminated at the completion of PAI if DEQ ECD makes a "No Further Action" (NFA) determination. However, if there is suspected historical use of chemicals or a known release of a hazardous substance from the site, or if ECD so directs, the RP must prepare the PAII. The second part of the PA requires an evaluation of exposure pathways and potential receptors. ECD will conduct a site visit at the conclusion of PAII. If ECD makes an NFA determination, the PA is terminated. Otherwise, the RP prepares the PAIII consisting of a work plan and a data evaluation report. At a minimum, the PAIII provides sampling and analytical data that enables ECD to determine if a release has occurred and whether further action is required. Thus, the PAIII provides the information necessary to assign the site to one of the state's two lists. However, it is not intended to provide a complete site characterization.

To initiate a voluntary PA, the RP enters into a written agreement with DEQ and makes a payment of $2,200 to cover oversight by ECD for PAI and PAII. If the PA advances to PAIII, ECD will provide oversight on a formal cost recovery basis.

Classification of Sites

The Oregon DEQ is required by statute to develop and maintain a list of facilities where hazardous substances have been released to the environment. DEQ initiated its site discovery program in January 1988. Following its review of various DEQ files and information provided by other state agencies and the public, DEQ notified 398 owners of 325 sites in November 1988 of the department's intent to include these sites on the Inventory of Confirmed Releases. After listing was contested by owners of 210 sites, DEQ

suspended action on the inventory. The inventory provisions in the environmental cleanup statute were subsequently amended in the 1989 legislative session. The new inventory provisions require DEQ to develop and maintain a list of confirmed releases and an inventory of facilities requiring additional investigation or cleanup. The appeals process has also been altered by the amendments. DEQ must notify owners at least 60 days prior to adding a site to the list or inventory. The owner then has 45 days to comment on the department's decision. DEQ's final listing decision can no longer be appealed to the EQC.

Regulations to implement the revamped inventory process are expected in April 1990. The new inventory will provide information on each site, hazardous waste releases from the site and the status of ECD or RP-lead investigations, removals, and remedial actions. The public may obtain copies of the inventory and DEQ must provide a report on the inventory, site discovery efforts, and program accomplishments each January to the Governor, the legislature, and the EQC.

Remedy Selection

The selection of the remedial action is based on analysis contained in the RI/FS. If RPs prepare the RI/FS, the ECD provides guidance on the range of alternatives the feasibility study should consider and evaluate. The final remedy is selected by the director of DEQ. In making this selection, the director considers the administrative record consisting of all information on the site, the assessment of the hazardous waste problem contained in the PA/SI and RI, and the analysis of alternative remedies presented in the FS.

Before DEQ makes the final determination, the public is provided the opportunity to comment on the proposed remedy. DEQ must provide public notice of any proposed remedial actions, provide at least 30 days for submission of written comments, and convene a public meeting if requested by 10 or more persons or a group with more than 10 members.

The guiding principle for selecting the appropriate cleanup level is "cleaner is better, background is best." Remedial actions should be protective of present and future public health, safety, and welfare. Generally, hazardous substance cleanups achieving background levels are presumed to be fully "protective." If remedies achieving background do not satisfy certain "feasibility" requirements, the director of DEQ may approve a remedy that

attains the lowest possible concentration level. These feasibility requirements place emphasis on the use of permanent solutions and alternative or resource recovery technologies. Furthermore, remedies should, to the maximum extent practicable, be cost effective, technically effective, and implementable.

RP Participation in Cleanups

In its first two years, the cleanup program has been extremely successful in obtaining RP participation in the remediation process. Approximately 30 voluntary stipulated orders have been issued to RPs to conduct the RI/FS. At sites with viable RPs, the state has issued only one unilateral order and that order was subsequently converted to a stipulated order. Some of the early settlements covered RD/RA in addition to RI/FS. However, recent stipulated orders are limited to the RI/FS, suggesting that RPs or their legal counsels are becoming more sophisticated about the remedial and settlement processes.

At this juncture, it is difficult to ascertain whether ECD will continue to settle successfully with RPs once sites progress to the RD/RA stage. There are some compelling reasons why RPs might more readily participate at the RI/FS stage and not at the RD/RA stage. Most importantly, participation enables the RP to become directly involved in the characterization of site problems and the framing of cleanup options. Also, the RI/FS is typically less costly than the RD/RA, and the RI/FS settlement agreement doesn't establish the RP's liability for remediation.

A number of factors are identified below that have affected or might be expected to affect RP participation in the cleanup process:

<u>Enforcement Authorities</u> The Oregon cleanup program has a full complement of order authorities. The program prefers to negotiate voluntary stipulated orders with RPs whenever possible. DEQ is authorized (and prepared) to issue unilateral orders if negotiations are unsuccessful. Injunctive action is possible but not anticipated; if funds are available in the orphan site account, DEQ can perform the work and seek punitive damages. Staff from the AG's office indicated that the lack of preenforcement review and the threat of punitive damages have enhanced ECD's efforts to settle with RPs.

Liability The liability standard specified in the statute limits ECD's prospects for finding RPs because generators and transporters are not generally liable. Thus, Oregon sites will typically have fewer viable RPs, for comparable sites, than states with liability extending to generators and transporters. The ECD readily acknowledges this limitation. However, very few non-NPL sites in Oregon historically imported hazardous waste. Having fewer RPs for a site may facilitate successful negotiations. However, since there are fewer RPs, the costs per RP are greater, thus discouraging settlement. Overall, the liability standard limits the number of RPs but may have either a positive or a negative effect on the success rate of negotiations.

Settlement Authorities The ECD is authorized to negotiate and settle with *de minimis* RPs. This settlement tool can enhance RP participation by reducing the share of costs for major RPs. However, given that generators and transporters are generally not liable, there are not likely to be many *de minimis* RPs. The new financial assistance program can be viewed as a settlement tool and may swing a few marginal RPs into compliance, especially to do site remediation studies (i.e., RI/FS).

Limitations of the Fund The fund is really quite small in comparison to the costs of site cleanups. The monthly fee collected from the Arlington facility is required for staffing, oversight, and pre-remedial activities. The orphan site account is limited if RPs are unwilling to conduct cleanup activities. The limited fund and constraints on its use when there are unwilling RPs would seem to encourage the program to reach settlements with RPs and make use of treble damages when RPs do not comply with orders. However, RPs might decide to "game" the system if the orphan site account is not available, requiring the program to use injunctions to bring RPs into compliance. Overall, the net effect of the limitations on the fund is uncertain; the limitations provide the impetus for a strong enforcement approach by ECD, but also create an opportunity for RPs to delay or impede negotiations.

Costs of Cleanups Sites are typically smaller and less costly to clean up than in many other states, but cleanup standards are strict. Other things being equal, stricter

standards will make site cleanups more costly and would reduce RP participation. ECD's determination to implement the cleanup standards and RPs' acceptance of them is just beginning to be tested at sites reaching the ROD stage.

Legal and RP Community Evidently, Oregon has a sophisticated environmental bar, especially in the Portland area where many of the sites are located. The AG's office lawyer indicated that legal counsels for RPs are encouraging them to get involved at the RI/FS stage. The environmental bar is also participating in ECD's environmental quality advisory committee. This consensus-building process is probably having a positive effect on RP participation. Program staff indicated that firms in Oregon may be participating in cleanups (studies) to foster public perception that they are sensitive to environmental concerns.

VI. PROGRAM OUTLOOK

In its first two years, the Oregon cleanup program has moved quickly to develop policies and regulations to guide the remediation process. The final elements of the regulatory structure are the revisions to the site inventory and listing rules that ECD expects to be completed in the next few months. Once the EQC approves the regulations, ECD can begin proposing sites for the list of sites with confirmed releases and the inventory of facilities needing remedial action.

At this point in time, ECD's cleanup efforts are focused on preliminary assessments, site investigations, and RI/FS projects. With a backlog of known sites needing PAs and the discovery of 50 new sites each year, the Site Assessment staff will be conducting PAs for the next several years. The Voluntary PA program will help reduce the backlog, although some staff time will be required to review RP-conducted PAs. In the next few years, RD and RA projects will command an increasing share of site response staff time and program resources in comparison to site investigations and RI/FS. Table OR-4 illustrates this trend in site response projects for the six-year period between 1987 and 1993. Site investigations and RI/FS projects as a percentage of total site response projects were 70% during the 87-89 biennium and are projected to drop to 55% and then to 48% during the next two

biennia. Site investigations and RI/FS projects account for 51.3% of site response project costs in the 89-91 biennium but only 14% in the 91-93 biennium.

TABLE OR-4
Site Response Projects

	NUMBER OF PROJECTS			STATE COSTS	
	87-89	89-91	91-93	89-91	91-93
STATE PROJECTS	**40**	**43**	**59**	**$6.8M**	**$18.3M**
• Pre-RI Investigations	21	12	20	$144K	$240K
• PRP Oversight	15	22	27	$2.7M	$4.0M
- RI/FS	13	13	12	$975K	$900K
- RD	0	6	9	$263K	$394K
- RA	2	3	5	$1.5M	$2.5M
- O&M	0	0	1	$0	$250K
• Orphan Sites	1	6	9	$2.8M	$12.9M
- RI/FS	1	5	3	$2.5M	$1.5M
- RD	0	1	3	$300K	$900K
- RA	0	0	3	$0	$10.5M
- O&M	0	0	0	$0	$0
• Removals	3	3	3	$1.1M	$1.1M
FEDERAL PROJECTS	**10**	**12**	**14**	**$215K**	**$485K**
• NPL - Mgmt. Assist.	6	7	7	$0	$0
• NPL - State Lead	0	1	1	$25K	$25K
• NPL - Match	-	-	-	$150K	$400K
• Non-NPL Cleanups	4	4	6	$40K	$60K
TOTAL	**50**	**55**	**73**	**$7.0M**	**$18.8M**

The number and total costs of site response projects are both projected to increase over the next two biennia. To meet this schedule, the ECD will need to add staff and expand program funding. The funding problem is particularly critical, given the projected increase in funding needs and the limited flexibility of existing funding mechanisms. In the immediate future, the program will need to rely heavily on general obligation bonds to keep orphan site cleanups on track. The use of bonds "solves" the short run funding problem but encumbers future funds, thus limiting available funds in subsequent years. Thus, although Oregon has taken positive steps to build up program funding capabilities, additional funding initiatives will be required unless the State is willing to compromise on the pace (or quality) of cleanups.

In addition to the orphan site funding problem, there are three developments that will be interesting to follow in Oregon:

- Whether the State will be able to negotiate settlement agreements with RPs to conduct RAs. To date, the program has been successful in negotiating RI/FS agreements and appears to have the tools and resolve to build on this effort. The major problem would seem to be the lack of a threat to conduct the RA (and recover costs) if negotiations break down.

- Once more sites reach the ROD stage, it will be interesting to see how the cleanup standards work in practice, how costly they are to implement, and what effect they have on RP participation. In the only test of the program's cleanup policies to date, the ECD rejected the RP-proposed remedy for a site and instructed the RP to consider more protective alternatives. The RP has complied with this request and has consented to implement one of these alternatives.

- The voluntary PA (and cleanup) program has the potential both to improve the pace of cleanups and to conserve program resources.

PENNSYLVANIA

OVERVIEW

Pennsylvania's State superfund program for non-NPL sites has been operating only since December 1988, although its NPL program has operated since the early 1980s. Its Hazardous Sites Cleanup Act (HSCA), enacted in October 1988, gives the State numerous authorities to undertake response actions, demand information from RPs, and issue enforcement orders. Furthermore, the State's claims against RPs for response costs, civil penalties, and natural resource damages must be upheld unless the RP can demonstrate on the basis of the administrative record that the State's action was arbitrary and capricious.

These relatively strong enforcement authorities are weakened by other provisions, particularly Section 1301 of HSCA. Under this section, the State may not issue enforcement orders or recover costs for remedial actions under HSCA unless it has brought action under other environmental laws and the owner or operator has failed or been unable to comply. The State may, however, conduct interim or emergency responses, which do not fall under Section 1301. In its first year of operation, the program took eleven interim responses, including one enforcement-lead interim response.

The State must also provide 120-day advance notice before placing a site on the State priority list, and the RP can prevent the listing by entering into a settlement for the site. When an RP initiates a cleanup on a listed site, the site is removed from the list. For sites with more than one RP, the State must prepare a non-binding preliminary allocation of proportionate responsibility among the RPs and must allow 120 days for negotiation. Any RP may pay its proportional share, plus a premium of up to 50%, and thereby become exempt from further claims. The State believes that this opportunity to cash-out is contingent upon a comprehensive settlement with all parties, but this issue is not yet resolved.

There are complex and conflicting provisions in the 113-page statute which are likely to produce litigation. Accordingly, the State must select its first enforcement cases carefully in order to establish favorable legal precedents for enforcement actions.

Funding Pennsylvania's Hazardous Sites Cleanup Fund has a balance of approximately $32 million and projected yearly revenues of approximately $50 million. Over half of its revenues are from a capital stock and franchise tax on businesses. The rest of the Fund's income is from appropriations, hazardous waste fees, interest, cost recovery, and Federal grants.

Sites and Staff Pennsylvania has 96 sites on the NPL and 2,335 on CERCLIS. Preliminary assessments have been done on almost all CERCLIS sites. The State estimates that about 800 non-NPL sites need further evaluation for possible cleanup under CERCLA, HSCA or other State laws. The program had 142 employees (including legal staff) in 1989 and was expected to grow to approximately 180 in 1990.

I. INTRODUCTION--SITES AND PROGRAM HISTORY

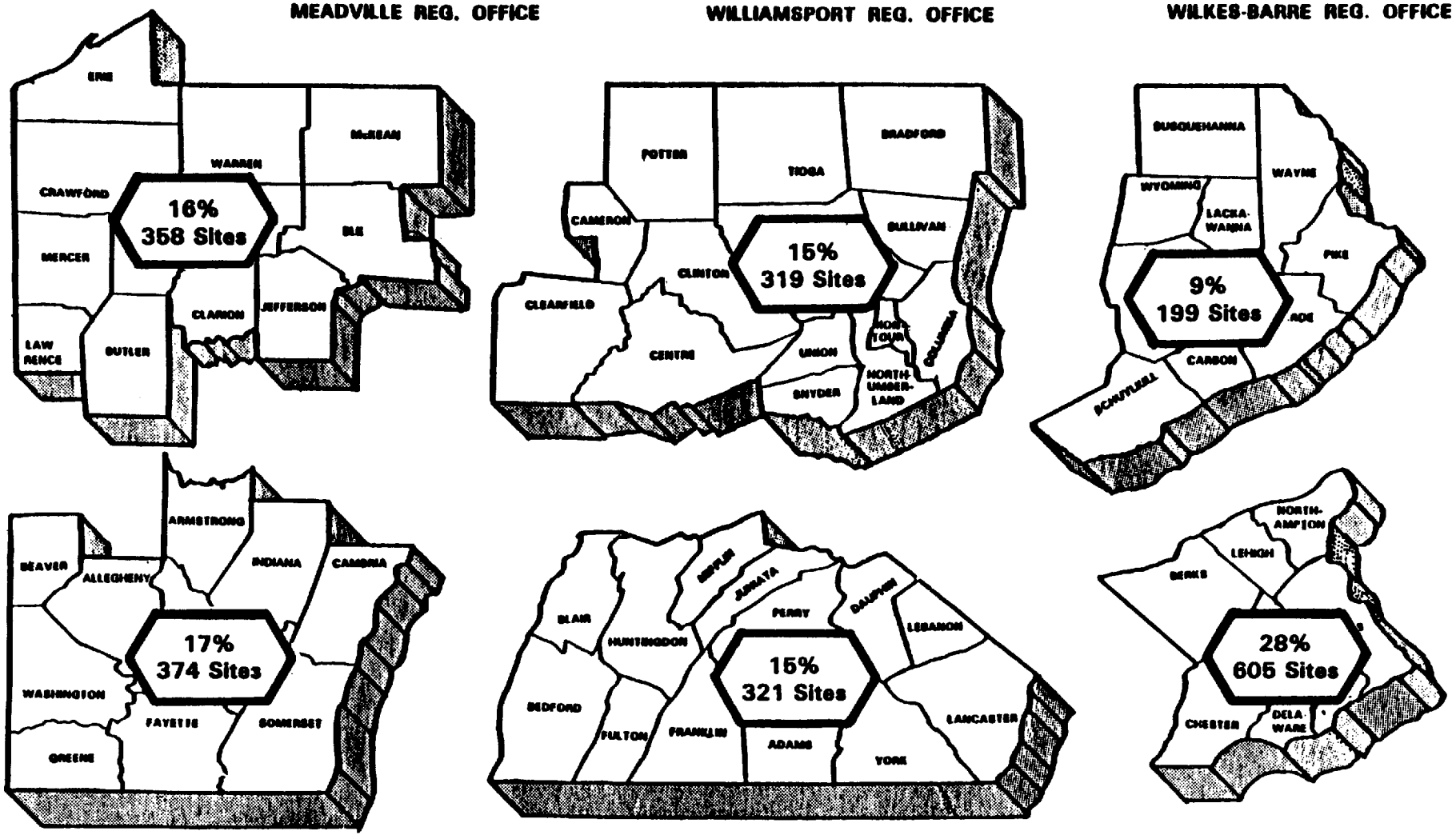
Pennsylvania has a large inventory of sites where remedial activities will be necessary. It has 96 sites on or proposed for the National Priorities List (NPL). Five (5) others were deleted after a no-action alternative was selected or after completion of

remedial action. The Commonwealth has a clear understanding of the universe of other (non-NPL) sites requiring action. Evaluations have been completed for most of the 2335 Pennsylvania sites on CERCLIS. By August 1989, preliminary assessments (PAs) had been completed on 2182 sites; and over 500 site investigations (SIs) had been completed. These sites are distributed throughout the State in each of the six Department of Environmental Resources (DER) regions. See Figure PA-1.

Based on EPA's and DER's assessment of sites, Pennsylvania estimates that approximately 800 sites may require further evaluation for possible remedial action in addition to those on the NPL. The Hazardous Sites Cleanup Program, established under the Hazardous Sites Cleanup Act (HSCA) enacted in October 1988, is designed to accomplish cleanup of sites that EPA will not be able to handle or will not be able to handle in a timely fashion. Because most of the large sites with multiple responsible parties (RPs) are already on the NPL, Pennsylvania expects most sites handled by the State program to have few RPs per site. Some of these sites will require extensive remediation and multi-million dollar remedies. Others will be smaller interim response actions. While the southeastern Pennsylvania region has the largest number of NPL sites and CERCLIS sites, Pennsylvania predicts that other regions will have the largest number of sites requiring action under the HSCA Program. Many sites continue to be remedied through the State's enforcement efforts under the Clean Streams Law and the Solid Waste Management Act.

Pennsylvania has participated in the Federal superfund program since the beginning. It signed the first multisite agreement in the nation with EPA in 1984. In 1984, the State had 8 people working on NPL sites. By 1987, it had expanded the staff to 25. Aside from the NPL sites, the State had no specific program for abandoned sites; it used its Clean Streams Law, Solid Waste Management Act, and common law public nuisance actions to the extent possible. After several years of debate, HSCA was enacted October 18, 1988 to deal with those sites not on the NPL. The law became effective on December 18, 1988. In the meantime, staffing had been increased in anticipation of the new law. By the spring of 1989, Pennsylvania had over 140 staff assigned to the program, and anticipates adding over 35 additional staff in 1989-90. HSCA is a highly detailed and complex statute replete with enforcement authorities and tools for obtaining site cleanup. It also creates a substantial cleanup fund with anticipated annual revenues of $50 million. The law's multifarious

CERCLIS Sites By DER Region



TOTAL SITES — 2176

FIGURE PA-1

provisions create numerous difficult problems of statutory interpretation for potential litigation, however.

II. STATUTE

The Hazardous Sites Cleanup Act is the basis for the State program.[1] The HSCA provides for strict liability, and the legislative history states that it also creates joint and several liability. The HSCA provides for four types of actions:

1. Remedial actions--these require a proposal to list a site on the State priority list, and involve complex procedures with numerous prescribed time periods for public comment and to negotiate, compel cleanup, or fund cleanup.
2. Interim response--any cleanup action requiring less than $2 million and 12 months to complete.[2] Interim response actions do not require listing of a site, but do require preparation of an administrative record and opportunity for public comment.
3. Prompt interim response--an interim response for which the administrative record may be compiled after the response.
4. Emergency response--authorized both by the HSCA and under the general powers of the State. It requires no special procedures, and is available for both hazardous and non-hazardous substances.

There are essentially two sources of enforcement and cleanup authorities in the law: chapter 5 and chapter 11. Chapter 5 sets out the listing process, orders, cost recovery, civil penalties, punitive damages, natural resource damages, and administrative record provisions.

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1. 35 P.S. 6020.101 *et seq.*

2. An interim response may exceed these limits if continued response is necessary to prevent, limit, or mitigate and emergency; if there is an immediate risk to public health, safety, welfare, or the environment; if assistance will not otherwise be provided on a timely basis; or if continued response action is otherwise appropriate and consistent with future remedial response to be taken. HSCA 103.

Chapter 11, which is wholly independent, sets out an additional set of enforcement authorities.

Chapter 5 Actions

Under chapter 5, apart from emergency responses (discussed *infra*, in section V), the DER has three possible approaches: prompt interim response; interim response; and remedial action.

For a prompt interim response, the DER may issue an order for immediate action, or take the action itself. The record on which the order or action is based is prepared after site cleanup action is initiated, and is subject to a 90-day public comment period. The recipient of a prompt interim response order is obliged to comply, and there is no pre-enforcement review.

A regular interim response commences with preparation of the record, and a 90-day public comment period. Issuance of the order or performance of the interim response by the DER follows.

Remedial action requires the DER to invoke the listing process. The DER is required to give RPs notice if further investigation or response at a site is deemed appropriate. The DER "may" allow them to conduct an investigation and undertake appropriate response, or may elect to conduct site investigation itself. The DER must also give all known RPs responsible for a site 120 days' notice prior to placement of a site upon the State priorities list. There is a 30-day comment period subsequent to publication of a site upon the list. Listing of a site is to be based on the EPA Hazard Ranking System, on maximizing use of Federal funds, and on DER's capabilities, per HSCA 502(a). However, sites need not be remedied in the order in which they rank. If an RP enters into a settlement with the State prior to the placement of a site on the list, the site "shall not be placed on the list." In addition, even if a site has been placed on the list, it must be removed if an RP has entered into a settlement, complied with the terms of the settlement, and "initiated a cleanup."[3] In selecting a remedy, the DER must develop an administrative record and provide a 90-day comment period before making a final decision. Then, after its

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3. HSCA 502(c), (d), (e).

final decision, the DER may issue its remedial action order, or conduct remediation itself. The listing provisions suggest that few, if any, sites will ever appear on Pennsylvania's priority list (apart from orphan sites). Listing is a prerequisite to State-funded remedial action.

Remedial action under chapter 5 is further complicated by a requirement that in any case involving multiple RPs, the State must prepare "a nonbinding preliminary allocation of proportionate responsibility among all known responsible persons," and give notice of such allocation. The State is then required to allow the RPs 120 days to reach agreement. During this period the State is forbidden from commencing an action for response costs, from issuing an enforcement order, or from commencing a response (other than an interim or emergency response). An additional section provides that any party who "voluntarily" accepts responsibility and agrees to pay its proportional share as determined plus an appropriate premium of up to 50% of that share, shall not be subject to claims in excess of that amount. This provision renders the process of nonbinding allocations difficult, and is likely to be the subject of litigation. For example, it is unclear whether the ability to cash-out is only allowed if there has been an agreed allocation, or if it is unilaterally exercisable by any RP on the basis of the initial non-binding allocation of responsibility.

Chapter 5 authorizes recovery of response costs. Such recovery does not depend upon prior issuance of an order. That is, the State's right to recover response costs is based solely upon its having expended funds, not upon the refusal of an RP to perform. The same is true for natural resource damages; there are no prerequisites. However, the State may only collect treble damages if it has issued an order and the RP has "willfully" failed to comply. Civil penalties are also provided for where an order has been violated, regardless of intent.

The standard of review of response costs and natural resource damages is deferential to the State: in an action brought by the State to recover response costs, civil penalties, and natural resource damages, the State's claim must be upheld unless the RP can demonstrate on the basis of the administrative record that the State's action was arbitrary and capricious. The State's assessment of natural resource damages is furthermore presumptively valid as a matter of law, subject to rebuttal by the RP. The State is entitled to pre-judgment interest on its recoveries of response costs. Response costs include

administrative and legal costs, and the RPs are responsible for these in the amount of (a) 10% of the response action costs or (b) the actual administrative and legal costs, whichever is greater. This provision minimizes the potential burden on the State to create a record keeping system solely for the purpose of recovering response costs.

The law provides for liens to be filed upon an award of response costs, civil penalties, or natural resource damages. The lien is a standard judgment lien, and does not have special priority as a "superlien." HSCA contains a deed recordation provision, requiring the grantor of land to insert language in the deed of any land if a hazardous substance is or ever has been disposed of thereon to the grantor's actual knowledge.

Chapter 5 also contains authority to issue orders for access or to require information and records. These orders, unlike the other Chapter 5 orders, are appealable to the Environmental Hearing Board. However, even for these orders the standard of review is highly deferential--requiring that the order be upheld so long as the State has a reasonable basis to believe there has been a release or threat of release of a hazardous substance or a "contaminant," and the order is "reasonably related" to determining the need for response, to choosing or taking the response, or to otherwise enforcing HSCA. The DER may also seek enforcement of such an order in court, or seek injunctive relief in lieu of an order.

Chapter 11 Actions

Chapter 11 provides an entire alternative set of enforcement provisions.[4] Section 1101 declares the release of any hazardous substance or a violation of any provision of HSCA to be a "public nuisance," for which response costs are recoverable. Section 1102 provides for enforcement orders, study orders, access orders, and orders requiring or modifying response actions. Unlike the orders issued under chapter 5, these orders do <u>not</u> require preparation of administrative records, or require the State to comply with notice provisions, negotiation provisions, and the like. Also unlike chapter 5, however, these orders may be appealed by RPs to the Environmental Hearing Board and to court. These orders are immediately effective upon issuance and must be complied with, even pending

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4. HSCA 1103(c): "The penalties and remedies prescribed by this act shall be deemed concurrent. The existence of or exercise of one remedy shall not prevent the department from exercising any other remedy under this act, at law or in equity."

appeal, unless the recipient of the order obtains a supersedeas (stay) from the Board. If the administrative order is not complied with, the recipient is guilty of contempt of court. Under Pennsylvania practice, in order to obtain a supersedeas it is the order recipient's burden to prove that it is likely ultimately to prevail on the merits, that it will suffer irreparable injury if the order is not stayed, and that the State and public will not suffer injury if the order is stayed. In addition to issuing orders, the DER may seek injunctive relief in court; the statute gives the same authority to district attorneys and solicitors of affected municipalities.

Section 1104 provides for civil penalties of up to $25,000 per offense per day, and provides for the award of a minimum penalty of $5000 per day for violation of an information or access order. The statute provides for criminal penalties and prison terms for making false reports, altering response actions ordered by the State, obstructing any agent or employee of the state, and certain other conduct identified as unlawful. Other provisions of chapter 11 allow citizen suits and citizen intervention in State cases, and protect whistleblowers. Another provision creates a legal presumption that if contamination or pollution is found within 2500 feet of the perimeter of an area where a release has occurred, the person responsible for the release is presumptively liable without further evidence. The presumption may be rebutted only by "clear and convincing evidence."[5]

Section 1113 requires the DER to give public notice of a proposed settlement in any proceeding under HSCA, allow a 60-day public comment period, and respond in writing to the comments. This provision is evidently intended to protect the public's rights to review a settlement in a way alternative to the Chapter 5 administrative record approach. However, it contains an appeal provision which may be problematic, especially if is usable by non-settling RPs. Any person adversely affected by the settlement may "appeal" it to the Environmental Hearing Board. The settlement must be upheld unless it is arbitrary and capricious based on the administrative record.

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5. HSCA 1109.

Section 1301

Although HSCA is replete with enforcement authorities and options, its flexibility is undercut by section 1301, inserted in the bill immediately before its enactment. That section provides that owners or operators or other RPs:

> shall not be subject to enforcement orders or the cost recovery provisions of this act, until the department has instituted administrative or judicial enforcement action against the owner or operator under other applicable environmental laws and the owner or operator has failed to comply with or is financially unable to comply with such administrative or judicial enforcement action. In the event of noncompliance with such administrative or judicial enforcement action, the provisions of the act may be applied by the department unless the owner or operator has obtained a supersedeas from the board or the court conducting any such judicial enforcement action. For the purposes of this subsection, such a supersedeas shall be based on whether there is a release or threatened release at the site, which constitutes a danger to the public health and safety or the environment.

The effect of this provision is to require the State to bring an action against an owner or operator under its Clean Streams Law, Solid Waste Management Act, or other law, and lose (or win but be unable to collect or obtain compliance), before resorting to the enforcement authorities or cost recovery provisions of the HSCA for remedial actions. (DER asserts that it may also issue an order under these other laws, determine that compliance will not be achieved, and then resort to HSCA.) This requirement goes far beyond the general preferences expressed in the statutes of other States for use of other authorities as a first resort. This provision seems to require certain exercises in futility, or delay in obtaining full remedies (i.e. where the owner or operator is only partially capable of remediation). This provision also means that most settlements driven by this law will be under other statutes. The need to use other statutes also creates organizational and jurisdictional difficulties for the staff. Potential HSCA sites may or may not be under HSCA jurisdiction, depending upon their enforcement posture. This provision does have an exception. Section 1301(c) provides that "nothing in this section shall affect the authority of the department or the governor to implement an interim response or an emergency

response." This may provide the State with an opportunity to order RPs to undertake interim responses even though remedies under other statutes have not yet been pursued. This issue will probably be litigated.

In addition, the language of section 1301 bars only the issuance of enforcement orders and initiation of cost recovery. It does not bar the initiation of site investigation under section 501, or even the selection of a remedy and listing of a site. It may be that settlements can be reached with other RPs under chapter 5 even though 1301 has not been complied with, so long as the remedial action order is not yet issued.

III. ORGANIZATION

In Pennsylvania, the Department of Environmental Resources (DER) is responsible for all environmental protection and conservation matters (apart from fish and game, which are handled by separate commissions). Under the Secretary, the DER's duties for cleanup activity are divided between two Deputy Secretaries--Environmental Protection, and Resources Management. Within Environmental Protection is the Bureau of Waste Management, which includes the newly established Hazardous Sites Cleanup Program. See Figure PA-2.

The Hazardous Sites Cleanup Program, with approximately 30 staff in Harrisburg, has four sections--site assessment, federally funded cleanups, enforcement, and state funded cleanups. In addition to these headquarters personnel, the six regional offices of DER have approximately 42 personnel in HSC sections; these offices will add 36 more staff in 1990. The personnel in the regions report to the regional solid waste manager, rather than to the HSCA Program in Harrisburg. However, during the first few years of implementing Pennsylvania's new Act, the central office in Harrisburg has maintained some direct control over regional activities.

The Information Management Section within the Bureau of Waste Management serves the program. It is responsible for tracking all hazardous waste manifests--entering approximately 900 per day. In addition, it handles the quarterly reports that determine the hazardous waste management and transportation fees that partially fund the HSC program.

6/21/89

HAZARDOUS SITES CLEANUP PROGRAM

ORGANIZATIONAL STRUCTURE

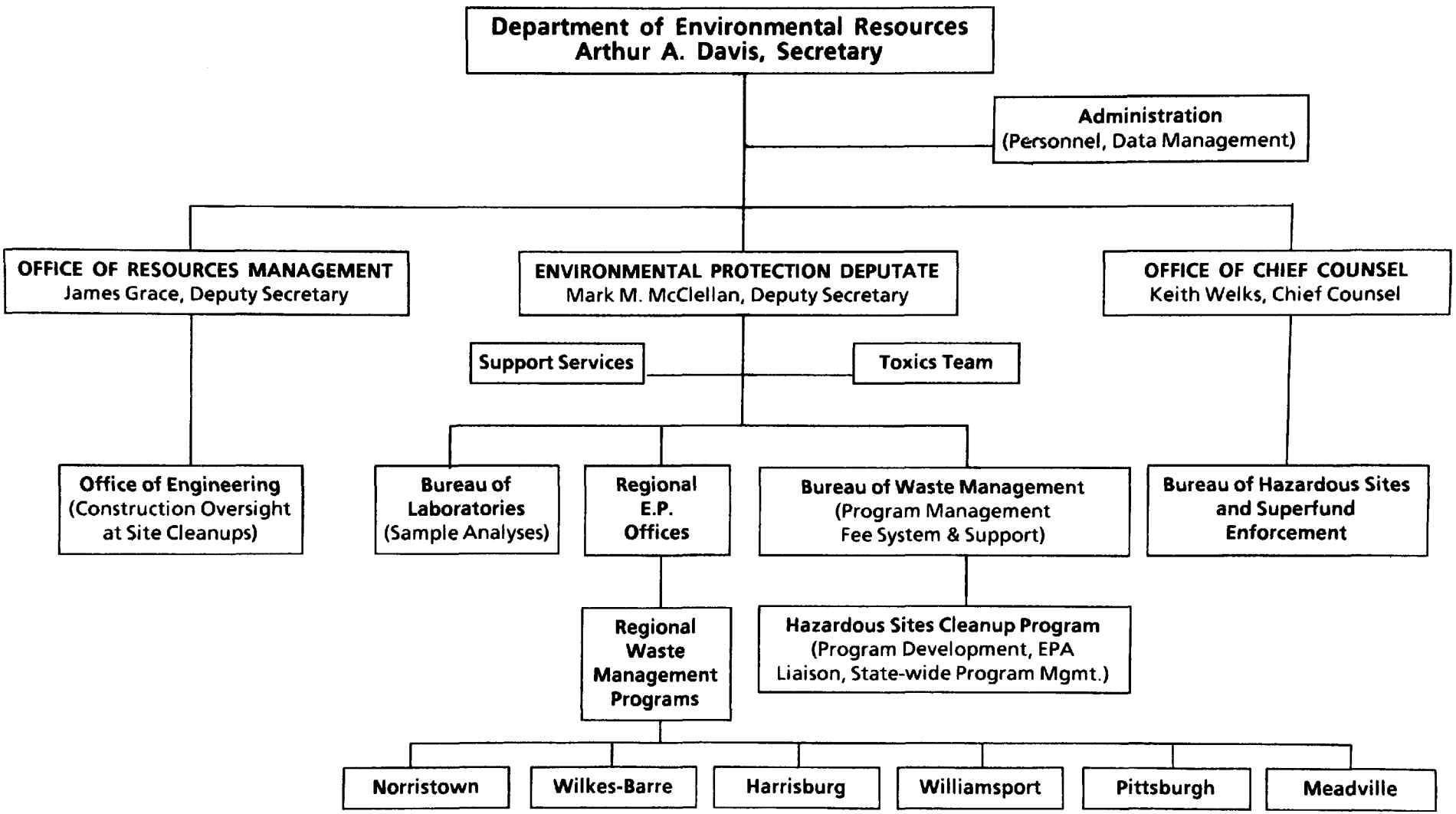

FIGURE PA-2

The Section currently has six staff and 12 temporary staff for entry of previous years' data. (The $2.7 million computer system was set up in December 1988.)

Also under the Environmental Protection Deputy is the toxics team of staff toxicologists and the Bureau of Laboratories. These serve more than just the HSC Program, but the Program funds certain of these positions.

Under the Deputy Secretary for Resource Management, the Office of Engineering is responsible for major construction contracting for remedial actions. Seven positions in this office are funded by HSCA.

The Office of Chief Counsel within DER provides all legal support for the program. These attorneys handle counseling, regulatory review, negotiation, and administrative and judicial litigation. There are five lawyers in Harrisburg and nine in the regional offices dedicated to the HSC Program. An additional headquarters lawyer provides support on contracting. There are several paralegals and support staff, and in 1990 there will be a special investigative unit for RP searches.

In addition to these units, the DER has a separate Emergency Response Program, which reports directly to the Deputy Secretary for Environmental Protection. It has one response coordinator in Harrisburg and two in each of the six regions, plus teams of 6-12 employees in each region who handle emergency response (especially during evenings and weekends) in addition to other duties.

In all, there were 142 staff involved in the relevant programs in 1989, with a projected expansion to over 180 in 1990. Despite the normal pattern in DER of decentralized decisionmaking and actions--leaving most things to the regions--the HSCA Program is highly centralized. This has occurred for two reasons: First, it was assembled quickly with the core being the NPL-based program that had been centralized; and second, because the statute is so complex and subject to litigation, the DER needs to control case selection and move cautiously in order to establish good precedents in the courts and before the Environmental Hearing Board. It is projected that the program will become more decentralized once it has operated for a while.

One obstacle to the effectiveness of the organization is likely to be the experience level of the field staff. Although the legislature authorized a substantial number of positions for this program, the entry level salaries are quite low even for those positions requiring

technical expertise--necessitating a substantial dependence on recent college graduates. Mid-level salaries are also low, relative to salaries in the private sector. The Norristown (Philadelphia) region is, in fact, unable to fill positions or retain staff because of salary levels.

With respect to site management, the state will use a "team" approach once the program is fully underway. In the regions each site will have a project manager, a chemist, a hydrogeologist, and a lawyer, plus one headquarters contact. The first few sites handled by the program--the state did four interim responses in the first six months of operation--were handled mostly with individual contracts executed out of headquarters; the regional staff oversaw onsite actions.

IV. FUNDING

Revenues

The Hazardous Sites Cleanup Fund had a carryover balance of $32 million on July 1, 1989. Annual revenues are projected to be approximately $50 million. See Figure PA-3.[6] The Fund derives its revenues from the following sources (projected FY 89/90 revenues in parenthesis):

- Capital Stock and Franchise Tax ($27.1 million)
- Appropriations ($15.9 million)
- Hazardous waste management and transportation fees ($4.5 million)
- Interest ($2.2 million)
- Cost recovery (none projected yet)
- Continuing Federal grant funds (three-year Management Assistance Grant $465,000)[7]

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6. Figure PA-3, provided by the DER, does not include the interest income expected to be received. This amount is projected at $2-3 million/year.

7. Does not include current cooperative agreement, multisite cooperative agreement, and management assistance grants for NPL sites, and PA/SIs. The multisite agreement alone exceeds $10 million.

HAZARDOUS SITES CLEANUP PROGRAM FUNDING

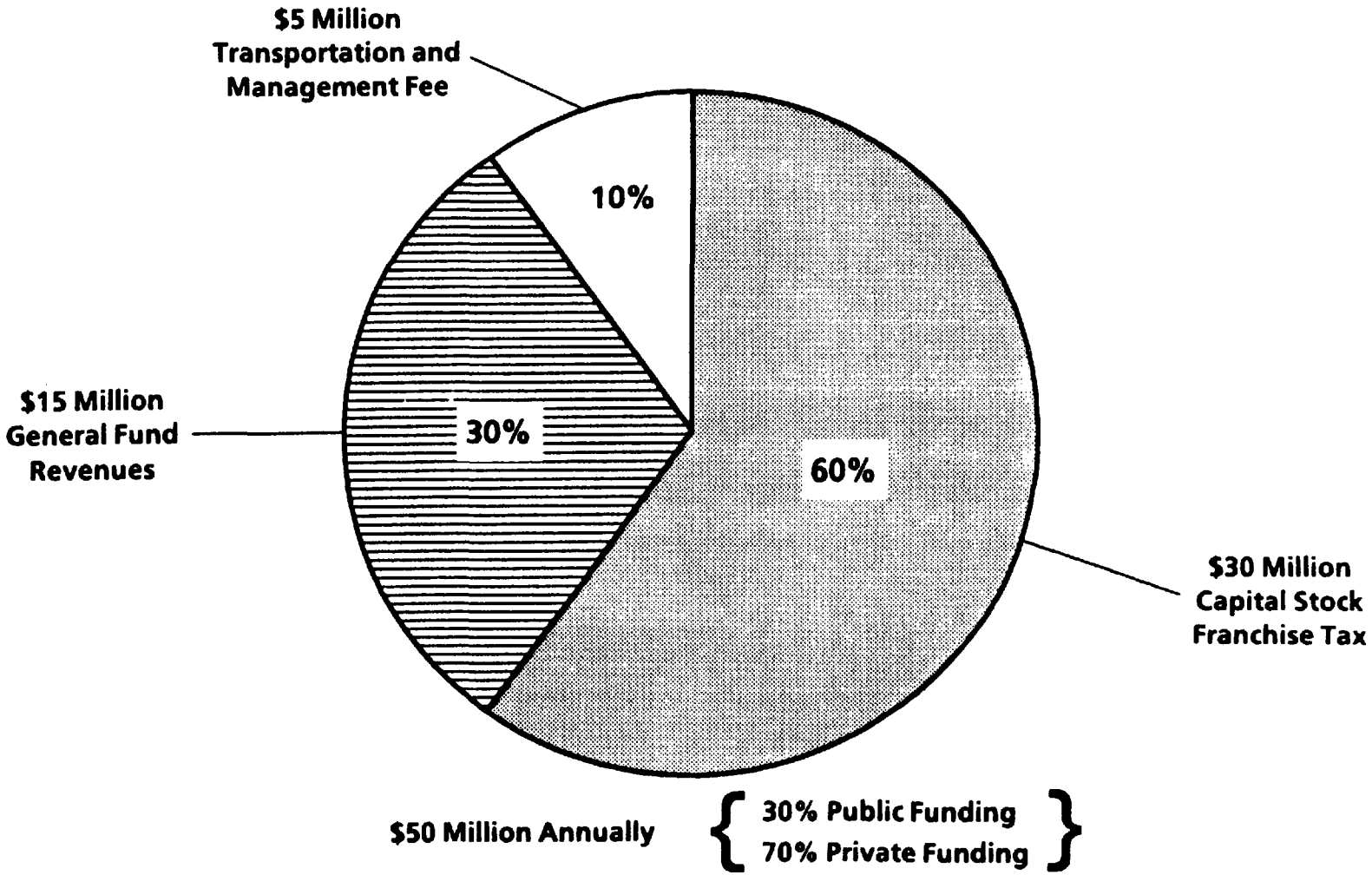

FIGURE PA-3

The largest portion of the Fund is derived from the Capital Stock and Franchise Tax, which applies to most businesses in the Commonwealth including manufacturing, service, and retail. The tax, which predates the HSCA, is imposed under the Pennsylvania Tax Reform Code of 1971, section 602. The legislature had considered reducing the 9-mill tax by one-half mill, but in considering ways to fund site cleanups retained the tax at the same level and obligated one-half mill of the tax to the Fund. The one-half mill tax is slated to produce $30 million per year for the Fund.

Beginning October 1, 1992, and each succeeding October, the State must determine the amount of the previous fiscal year's expenditures and encumbrances and the fund balance. If the Fund balance exceeds the prior year's expenditures and encumbrances by two times the expenditures and encumbrances, the one-half mill tax ceases. It resumes after a year in which the ending balance is less than the prior year's obligations. This provision creates a substantial incentive to expend Fund monies. The cut-off may influence cleanup strategies and enforcement activities. For instance, the provision may discourage the State from pursuing RP cleanups, or it may force the State to spend quickly at the end of a fiscal year. Similarly, because of the lengthy administrative record and site-listing process required to initiate remedial actions, it may in the early years encourage use of the more flexible interim responses.

The hazardous waste management and transportation fees are designed to produce $5 million per year. The Secretary of the DER has authority to adjust the fees to assure that they produce this level of funding plus the reasonably projected administrative cost of collecting the fee. The fees are designed not only to produce revenues, but to provide incentives toward recycling, treatment, and waste minimization, and against disposal. The statutory rates that apply until adjustment by the Secretary are:

- Transportation of hazardous waste for storage, treatment, or disposal--$3/ton
- Transportation of hazardous waste to a recycler--$1.50/ton
- Storage of hazardous waste at a legitimate commercial recycling facility--no fee
- Storage or treatment of hazardous waste on the site where generated or at a captive facility--no fee

- Storage of hazardous waste at a commercial hazardous waste management facility--$2/ton

- Treatment or incineration of hazardous waste at a commercial hazardous waste management facility--$5/ton

- Disposal of hazardous waste at a commercial disposal facility--$12/ton

- Disposal of hazardous waste on the site where generated or at a captive facility--$8/ton

The transportation and management fees are cumulative. Because there are no management fees charged on hazardous wastes going out of state (only transportation fees), the fee system may encourage shipment of wastes out of state. The entire fee system may discourage wastes from entering the State. However, neighboring States also have fairly substantial fee structures, so these effects are minimized.

The State relies far more heavily on the tax revenues than on the fees for several reasons. First, heavy industry in Pennsylvania is generally in poor financial condition and not able to fund the bulk of the program. Second, there are currently no commercial hazardous waste landfills in operation in Pennsylvania. The $5 million per year fee was thought to be the maximum available from this source. The fee is also linked to certain benefits and grant programs in HSCA described below.

The DER expects appropriations for the program to remain relatively steady at $15 million per year.

Interest income could be very substantial given the size of the Fund, particularly in the early years. The requirement to expend approximately half the fund each year beginning in 1991-92 may make this component less significant over the long term.

In previous years, the State received EPA funding under management assistance grants (MAs), a cooperative agreement (CA) to conduct PA/SIs, and a multisite cooperative agreement (MSCA). These funds were essentially dedicated to NPL sites and to PA/SI work. Any future grants from EPA will be deposited into the Fund. Pennsylvania currently has no CORE grant.

Expenditures

The Fund may be used for the following purposes:

- Program administration-salaries, management, expenses (approx. $14 million/ year)
- CERCLA match
- Remediation/response contracts (approx. $30-35 million/year)
- Grants to industry for recycling/minimization-25% of equipment costs (up to $2 million/year)
- Grants to host municipalities of new facilities ($2 million/year in Host Municipalities Fund)
- Grants to host municipalities for evaluating siting of new facilities (up to $50,000 each)
- Grants to counties for planning related to siting of new facilities (up to $50,000 per county)
- Grants to municipalities for evaluating proposed remedial actions (up to $50,000 each)
- Loan fund to assist industries in cleanups (2% of annual management and transportation fees--*viz.* $100,000/year)

The Fund may be used for all of the above purposes, and for emergency responses. In addition to hazardous substance emergency responses, up to $2.5 million of the Fund may be used annually for emergency responses for nonhazardous substances where there is an imminent and substantial endangerment to the public health and welfare or the environment. This is in addition to the State's existing emergency response program which is funded from other sources.

The Fund may be used for alternative or replacement public or private water supplies necessary to protect the public health.

The Fund may be used for a State-funded cleanup at an NPL site if EPA fails to act and has no agreement with an RP, provided, however, that the total State funding in excess of the minimum share shall not exceed $6 million annually.[8]

In general, the State expects to spend approximately $50 million per year. Obviously, items like the State CERCLA match and the costs of remedial actions will vary over time, as will the award of siting grants to municipalities.

Fund Evaluation

The Fund is expected to have revenues and expenditures of approximately $50 million per year, but these expenditures have been lower in the first year, and can be expected to be somewhat lower in the first several years because of the lengthy process required for a full remedial action under HSCA. However, excess dollars in the Fund during the first few years will rollover into the next year's available funds. This will allow spending in excess of the $50 million as remedial sites are loaded into the pipeline. Federal matching obligations may also require some of these funds, especially considering the large number of NPL sites now reaching the remedial action stage.

Because of the variety of revenue sources, and the number of expense categories, the size of the Fund may be somewhat misleading. Approximately $14 million/year is required for program administration, which is approximately $1 million less than expected annual appropriations. Approximately $5 million/year will be paid out in grants and loan funds. The recycling grant program, the Host Municipalities Fund, and the remedial action loan fund are all expressly funded out of the $5 million management and transportation fees, so this category is mostly a "wash" of revenues and expenditures (although the $2 million recycling grants phase out in 1993). This leaves approximately $33-34 million/year in revenues plus any carryover funds available for the CERCLA match and for State cleanup activities at non-NPL sites. Assuming the match requirement is $10-15 million/year, Pennsylvania projects annual revenues of about $18-24 million to deal with

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8. HSCA 502(e). This provision was probably included because of Pennsylvania's experience under the initial CERCLA program when federal funds ran out (*viz.* before superfund reauthorization). Pennsylvania advance-matched over $1.6 million prior to SARA in order to assure continuation of the cleanups.

State sites. Including carryovers from early years, Pennsylvania may have $30-35 million/ year available for these purposes.

The State has estimated that EPA and the HSCA Program will need to evaluate further action at about 800 non-NPL sites. It also projects that about 60% of the sites selected for action will be handled by RP cleanups or by state cleanups with successful cost recovery. This percentage estimate is based on the current breakdown of funded vs. enforcement sites in the Federal program. Although it is used consistently by persons throughout the program, it represents a hunch or best guess.

Some portion of the 800 sites will need action under the HSCA Program. At this time, it is too early to assess whether a large percentage of these will require expenditures from the Fund. Over a twenty-year period, assuming appropriation levels continue to support the program and all other factors remain constant, the State will have approximately $400 million to devote to State sites. Even if a fairly high percentage of sites ultimately require State funding, the program appears better funded than that of many other States.

The actual targeting of the Fund is likely to require its use for interim response actions and for actions related to the enforcement, oversight and management of RP-performed cleanups, as well as for remedial actions. Cost recovery could allow the Fund to deal with more sites. However, cost recoveries cannot exceed the $30-35 million annually available for State sites plus some amount for administration, plus whatever cost recovery is received for the funds spent on the CERCLA match (approximately $15 million per year).

The DER's stated goal for the program is to clean up 250 (150 federal and 100 State) sites by the year 2000 (*viz.* over the first 12 years of the program). DER projects that 4-6 interim responses and 4-6 remedial actions on non-NPL sites will be initiated each year. Provided that RP cleanups constitute significantly more than the majority, the HSCA Fund may be adequate over this period.

V. REMEDIATION PROCESS

In its first year of operation, the HSCA Program has focused primarily on staffing, developing procedures, and conducting interim response actions in order to make the presence of the program felt. The State has conducted interim responses at 11 sites. Most were prompt action interim responses. One was an RP-lead response.

Currently, the procedure for identifying sites for action and commencing action is as follows: A regional office will refer a site to the headquarters office of the HSCA Program with a Hazardous Sites Assessment Report (HASAR). The Assessment Section will then evaluate the HASAR to determine whether to proceed. (If a PA/SI has already been completed, this is used in lieu of the HASAR). For those sites where it is proposed to proceed, the region prepares a document to justify the action proposed to be taken (Response Justification Document). This is reviewed by the HSCA Program; if action appears to be warranted, the Program recommends that the Deputy Secretary for Environmental Protection "deem" the site appropriate for action.[9] Criteria for "prompt interim response" have been developed by the Program. Remedial response sites are selected based on their HRS scores.

After a site has been deemed, the Program initiates one of the actions described above in section II. One RP-lead and ten Fund-lead interim responses have been initiated in the first year of the program. Where the action is a Fund-lead interim response, the work order and scope of work are prepared by the region and faxed to the headquarters office. That office approves the scope of work and notifies the contractors to prepare a work plan and commence work, usually within 1-5 days.

Examples of early interim responses under the new program include the Metzler Barn Site and the Railroad Borough Site. At Metzler Barn, the owner of a barn full of thousands of gun solvent containers signed an access agreement, and the state's contractor took the response action--collecting the solvents, shredding the cans on site, and arranging for disposal. The action cost approximately $450,000 and took 12 months to complete. The Railroad Borough case was a removal of 150 drums and contaminated soil from a creek

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9. This term comes from HSCA 501(a).

bank above a water supply, and was completed in 4 days. It cost approximately $200,000. Follow-up soil removal actions continue. Cost recovery may be pursued in both cases.

The DER currently has two interim response contractors under contract--one for $2 million and one for $6 million--with the option of extending each contract to $10 million or more. It also has three general technical assistance contractors under contract, each for $2 million, with the option of extending the term and amount. It also has a laboratory services contract.

The remedial action process, also described above, includes preparation of an administrative record, public comment, up to two 120-day negotiating periods (which may overlap), and numerous settlement provisions. In determining how best to implement remedial actions under HSCA, the DER is attempting to assess the advantages of using the Fund to conduct the RI/FS, and then requiring RPs to conduct remedial action. This approach may have several advantages. It allows the State to maintain closer control and supervision over the technical adequacy of the work. It is consistent with sections 501(a) and (d), which allow the State the flexibility of ordering an investigation or conducting it itself. This approach could potentially streamline the administrative decision process set out in sections 505 and 506. The DER has experimented with this approach at one site, where the monitoring wells and sampling were installed and evaluated by the DER, and then the operator signed a consent order to conduct both airstripping and evaluation of the contamination.

Section 1301 Implications

The HSCA remedial action process is lengthy. The effect of section 1301 on this process is potentially quite significant. The State is obliged to attempt to get site cleanup from owners/operators under other environmental statutes before attempting to act against owners, operators, generators, or transporters under HSCA. The existence of 1301 creates some jurisdictional problems in the regions--is a site a HSCA site or not? The shifting status of sites makes the organization of work more difficult. Staff in the regions are divided by program, but because potential HSCA sites may be dealt with under water or solid waste laws, responsibility for a given site may shift.

Section 1301 has also abrogated the State's ability to choose the best remedy for each site based on the characteristics of the site and the flexibility of the remedy. Instead, it establishes a statutory requirement that dictates the type of response and the target, even where these may be less than optimal or sufficient from an environmental or fiscal point of view, or where these might occasion substantial delay. Section 1301 threatens to be the greatest constraint upon site cleanup where a substantial remedial action is needed and there is a viable owner/operator (but one which is unable or unwilling to shoulder the entire burden). Such an owner/operator may vigorously contest any enforcement actions under the Clean Streams Law or Solid Waste Management Act, and tie the State up in lengthy appeals under those laws--preventing the State from even invoking HSCA.

Because of 1301 and the elaborate procedures surrounding remedial actions, the Pennsylvania program appears to be developing a strong preference for interim responses--which are subject to neither constraint. Interim response orders may be issued, or the State may conduct Fund-lead interim responses.[10] Because of the relatively high $2 million cap on interim responses (higher than many so-called remedial actions in many other States), Pennsylvania may be able to avoid many of the difficulties in its statute and accomplish a great number of responses. This solution is, however, not available if a substantial remedial action is needed.

Companies appear to be conducting more cleanups under other State laws since the enactment of HSCA. This is not a result of 1301, however--which is, after all, a constraint upon the state, not upon the RP. Rather, it results from the prospect of owner/operators facing potential site listing, treble damages, and natural resources damages--all of which may be avoided by settling under another statute.

NPL Sites

Of the 96 sites on the NPL in Pennsylvania, the State has the lead on 17. It does not anticipate taking on additional state leads in the near term because of the need to focus on the new HSCA program, and also because of the perceived inefficiency of the

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10. Although the State could issue an interim response order under either section 505 or section 1102, the State is more likely to use 1102, which requires no administrative record or public comment period but does allow an appeal to the environmental hearing board.

additional layer of oversight and auditing by EPA. The DER also acknowledges that the cumbersome contracting procedures required by Federal and State law seem to offer few time advantages at NPL sites over EPA contracting.

Pennsylvania anticipates adding additional sites to the NPL. It is confident that a number of sites not yet on the list will rank high enough to be placed on the NPL. Remediation procedures on Pennsylvania NPL sites are fairly standard by now. However, the State is concerned with potential operations and maintenance (O & M) costs of some remedies. Also, the estimated cost of EPA remedial actions seems to be increasing rapidly (e.g. the Lansdowne site remedial action increased from $5 million to $11 million; the Lackawanna site from $17.5 million to $28 million; the Drake Chemical site will cost approximately $90 million). The State is concerned at meeting these shares while having insufficient control over costs.

Emergency Response

Pennsylvania has a well-organized and funded emergency response capability at the State level. The program was organized in June 1987 and is independent of the HSCA program (which was enacted later). It handles all types of emergency responses and is not limited to hazardous substances.

In 1988, the emergency response office handled 1600 incidents. Transportation incidents comprised 377; spills from fixed sites 1042. Fires, drinking water issues and other events accounted for the remainder. Pennsylvania has achieved a high rate of direct payment for responses by the responsible party; it paid for only 20 responses in 1988. Responses are primarily done by contractors, but overseen by the response coordinator or assistant or response team in each of the 6 regions. Responses are funded out of various State funds including the Clean Streams Fund, the Solid Waste Abatement Fund, and others, as applicable.

Now that HSCA also provides for emergency response capability, the two programs have coordinated their jurisdiction. In general, if a response is needed within the first 24 hours, it is handled by the emergency response office; if longer than that, the HSC Program may handle it. The two offices have cooperated on one of HSC's four interim responses in 1989--the emergency response office provided access to contractors.

The Pennsylvania DER handles most emergency responses in the State. EPA's Region III is more active in areas close to its offices in Philadelphia and in response to larger incidents. The Coast Guard handles spills in navigable waters within its jurisdiction. DER coordinators are involved in all Federal responses.

Cleanup Standards

The State's legal standard for cleanup (based primarily upon its Clean Streams Law, which applies to groundwater as well as surface water) is cleanup to "background." While the State may, in settling a case, accept a different standard, the State will not release liability unless background is achieved.

The "background" standard does not expressly apply to cleanup actions voluntarily undertaken by the State such as a State-funded cleanup. Rather, it is a regulatory standard. This distinction is expressly retained in HSCA 504(f), which allows the DER to waive a cleanup standard if the cleanup is paid for by the Fund.

The State uses its various regulatory program standards as ARARs. It has no risk factor regulations or regulations specifically promulgated to serve as cleanup standards. It is developing such regulations under HSCA. Section 504 of HSCA specifies that, until completion of the rulemaking, cleanup standards are those specified in section 121 of CERCLA (including ARARs). Section 504 allows the State to use more stringent standards on a case-by-case basis without such rulemaking either (1) if the general standards would not adequately protect public health or the environment or (2) if the additional standard would significantly enhance environmental protection relative to its cost.

VI. PROGRAM OUTLOOK

Pennsylvania has a large number of hazardous waste sites and appears to have allocated sufficient resources to the task of response. The HSCA funding mechanisms are stable. The program is adequately staffed, although staffing needs and allocations may become clearer once the program has operated for several years. In its first year of operation, the program has concentrated on interim response actions. A shift to more

remedial responses can be expected in the future. The emergency response effort appears to be well-organized.

It is too early to assess program organization. Pennsylvania intends to decentralize its HSCA effort after the program gains experience. A decentralized program may facilitate cleanups, but will do so only if the DER can attract and retain sufficient highly-qualified technical staff in the regional offices. This may continue to be a problem in some regions absent a revision of the salary structure.

The most difficult issues potentially facing the program are whether the complexity of the statute and opportunities for litigation will hinder the State's enforcement efforts, and whether the numerous prescribed steps in the remediation process will permit a rapid pace of cleanups. Neither of these can be assessed with certainty. The statute is more complex than any other State superfund statute, and may provide grounds for litigation by RPs. The statutory process for obtaining remedial responses is detailed and may require lengthy periods of time (especially where there are multiple RPs). Pennsylvania may need to streamline this process to achieve expeditious remediation.

TEXAS

OVERVIEW

Operating under the Texas Solid Waste Disposal Act (SWDA), the Texas Water Commission (TWC) conducts State superfund efforts in Texas. State activities, including CERCLA match, are funded by the Hazardous Waste Disposal Fee Fund, which is established by the SWDA and is referred to as "Fund 550." Fund 550 will collect approximately $9 million annually, mostly from a hazardous waste disposal fee, interest, and a new commercial hazardous waste fee. It has a current unobligated balance of $13 million. The TWC oversees or leads work on the 29 non-NPL sites listed on the State registry, and it handles 15 of 16 Fund-lead NPL sites. There are 29 Texas sites listed on the NPL.

The Texas Hazardous Substances Spill Prevention and Control Act supplements the authority under the SWDA, providing funds for cleanup of hazardous substances discharged into State waters, including groundwater. Though it has a cap of $5 million, this fund contains under $1 million.

The SWDA provides order authority, injunctive relief, liens, cost recovery, and civil and criminal penalties. For each new site the TWC must determine whether the site can be handled under RCRA-type authorities or pursuant to an agreed order. If it cannot, the TWC evaluates the site for State registry listing, holds a non-adjudicatory public meeting, and issues superfund orders. Fund 550 monies may not be used for remedial actions until orders are issued to any known RPs at a site. Though the State may recover its costs, no oversight expenditures may be recovered if RPs voluntarily conduct RI/FS or RD/RA. Cleanup orders may be appealed by RPs to court.

Enforcement Of the 10 sites first placed on the State registry in 1987, RPs were ordered to perform RI/FSs on 7 sites. These orders resulted in compliance in two cases, appeals in four, and noncompliance in one. The appeals are still pending. In an attempt to prevent future appeals, since 1988 the TWC has been inviting RPs to negotiate before it issues orders. This policy, which was subsequently required by 1989 amendments to the SWDA, has resulted in six negotiated RI/FSs on the 18 sites added to the State list in the last two years.

Program Organization Within the TWC Hazardous and Solid Waste Division, the Enforcement Section attempts to secure RP compliance using non-superfund enforcement authorities. If these attempts fail, the case is referred to the Contract Remedial Activities Section, which has a staff of 27. The majority of the staff works on NPL sites. Five staff are responsible for the 29 State registry sites. The TWC Legal Division provides legal counsel for the State superfund program; the Environment Section of the Attorney General's Office handles all litigation for the TWC.

A variety of circumstances have limited the remediation of State registry sites. These include understaffing, delays occasioned by RP appeals, and the need to perform RI/FSs on Fund-lead sites. As of fall 1989, none of the Fund-lead RI/FSs on State registry sites had yet commenced because of delays in procedure and contracting. Thus, in FY 89, the State Superfund Unit spent only $140,000 of Fund 550 monies, and it expects to spend only $798,000 for State registry sites in FY 90. Although Fund expenditures will increase, sufficient funding for long-term cleanups of all State registry sites is uncertain.

I. INTRODUCTION--SITES AND PROGRAM HISTORY

Texas is the nation's largest generator of hazardous waste and is facing the need for cleanup of hazardous waste and hazardous substance disposal sites associated with its long industrial history. Waste sites in Texas are most frequently associated with the petroleum and petroleum refining industry, the chemical industry, wood treating facilities, pesticide formulation, and metals reclaiming operations. As of 1989, Texas has 29 sites listed or proposed for listing on the federal National Priorities List (NPL). In addition, the state has other sites requiring remediation, including 29 sites placed on its State registry since 1987. The identified NPL and State registry sites are not evenly distributed throughout the State. The greatest concentration is in the vicinity of Houston (Harris County), which has six (6) sites on the State registry and ten (10) on the NPL. The listed sites are not the entire universe of sites requiring attention. Texas has over 1000 sites on CERCLIS, of which some number will require remediation.

Texas first enacted its Solid Waste Disposal Act in 1969. This Act has been amended on numerous occasions, and in its current form now constitutes the core of Texas' program for the management of solid and hazardous wastes, the management of hazardous substances, and the cleanup of sites. Essentially all disposal prior to 1969 was lawful unless it either violated the state water quality laws or constituted a public nuisance. Throughout the 1970s and 1980s amendments to the Act further specified the requirements for handling and disposal of solid and hazardous wastes. In 1981 the legislature enacted a bill to establish the Texas Disposal Facility Response Fund, in order to provide matching funds for federal Superfund sites. In 1982, the governor designated the Texas Department of Water Resources (TDWR) as the agency with responsibility for Superfund activities.

In 1985, the TDWR was merged into the Texas Water Commission (TWC). That same year, the legislature amended the SWDA to create a State "superfund" program for sites not eligible for funding under the federal program. Until that time, Texas had no program for handling inactive or abandoned sites, or for reaching generators and transporters with respect to such sites, except through the use of its water quality laws. Under the 1985 law the Hazardous Waste Fee Fund superseded the prior Fund; the Fee

Fund, generated by fees on the disposal of hazardous waste, was made the source for State CERCLA matching monies and monies for Texas cleanup of other waste sites that would be placed on the new State registry of sites. Twenty-nine (29) sites were listed on the State registry of sites in 1987, 1988, and 1989 under the 1985 law. In 1989, the law was substantially amended to provide for revised procedures and resources in a consensus bill backed by the Texas Chemical Council and the Texas Chapter of the Sierra Club.[1]

II. STATUTE

The Texas program for control of inactive and abandoned sites and for cleanup of sites is governed by two primary statutes. These are the Texas Solid Waste Disposal Act (SWDA)[2] and the Texas Water Code. The State "superfund" program consists substantially of sections 8(g), 9, 11, 11a, 12, 13, 14, and 15 of the SWDA (recodified as Tex. Health & Safety Code 361.181-.203, 361.271-.280). The entire statute was recodified effective September 1, 1989. References hereafter are to the original SWDA section numbers, with the new section numbers given in parenthesis. Additional authorities relevant to the cleanup of sites are found in Water Code Chapters 5, 26, and 27, and in the regulations at 31 Texas Administrative Code Chapter 335 ("Industrial Solid Waste and Municipal Hazardous Waste"), and Chapter 337 ("Enforcement Procedures").

Enforcement Authorities

The TWC has a number of order authorities available to it for cleanup of sites under these statutes. Section 4(e)(10) (361.301) of the SWDA provides for emergency orders relating to solid waste management activities in order to protect public health and safety or the environment. Section 4(m) (361.303) provides for corrective action orders for releases of hazardous waste into the environment from RCRA interim status facilities.

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1. S.B. 1502, Acts of 71st Legislature, Regular Session (1989).

2. Tex. Rev. Stat. Ann., Health-Public, Article 4477-7 (Vernon Supp. 1988) as amended; recodified as Tex. Health & Safety Code, Chapter 361 (Vernon 1989).

Because the TWC has other, more flexible, order authorities neither of these provisions is often used.

Section 337.1 of the regulations authorizes orders to obtain compliance with any provision of the SWDA or the Water Code. These orders frequently cite violations of section 335.4, which requires that solid wastes be managed so as not to cause pollution or potential pollution of the waters or groundwaters of the State. This cleanup authority is preferred by the TWC, because it does not require proof of whether a substance is a hazardous waste or hazardous substance, it is not dependent upon what type of facility is cited, and it does not require the showing of an imminent or substantial endangerment.

Section 8(g) (361.272) of the SWDA is, however, the primary vehicle for enforcement orders at State "superfund" sites and at other sites where it is necessary for the TWC to reach generators, transporters, or other potentially responsible parties (RPs) beyond simply the site owner or operator. This provision authorizes the TWC to issue an order:

> if it appears that there is an actual or threatened release of solid waste that presents an imminent and substantial endangerment to the public health and safety or the environment: (1) from a solid waste facility where solid waste is stored, processed, or disposed of; or (2) at any site at which one or more of those activities concerning solid waste have been conducted in the past, regardless of whether such activity was lawful at the time.

In 1989 the legislature amended the definition of solid waste to provide that for purposes of State superfund orders the term "solid waste" "shall also include hazardous substances." This lifted a jurisdictional impediment to some uses of superfund orders. Section 8(g)(4) (361.276) provides for joint and several liability. However, it also allows an RP to prove by a preponderance of the evidence that the release or threatened release is "divisible"--*viz.* that the waste "has been and is capable of being managed separately under the remedial action plan."

The 8(g) (361.272) order is issued by the TWC after a non-adjudicatory public meeting. While an RP may submit comments or make a presentation, there is no opportunity to present witnesses or conduct cross-examination. The order may be challenged by an RP by filing a petition in the Travis County (Austin) District Court

within 45 days. The filing of the petition formerly stayed the order pending decision by the court, and the RP was only required to move the case forward within one year. In 1989, the automatic stay provision was replaced with one that allows the TWC to take remedial action pending the appeal, unless enjoined by the court under its general equity jurisdiction. Although the recipient of a superfund order is responsible for bringing the case and moving it forward, the TWC has the burden of proof. It must prove by a preponderance of the evidence that (1) there is an actual or threatened release at the site, and (2) the petitioner is liable for its elimination in whole or in part. For its part, the petitioner may contest the order and may prove by a preponderance of the evidence that its liability, if any, is divisible. Finally, "if the appropriateness of the selected remedial action is contested in the appeal of the administrative order, the remedial action shall be upheld unless the court determines that the remedy is arbitrary or unreasonable."

The TWC is entitled to recover its reasonable attorneys fees and costs, including site assessment costs, if it prevails.[3] However, RPs are entitled to recover their costs, including attorneys fees, witness fees, and engineering studies, if the court finds an order "frivolous, unreasonable, or without foundation as regarding" such party. A 1989 amendment allows the court to award the TWC up to double the costs it incurred if the RP appeal is "frivolous, unreasonable, or without foundation." This provision does not cover response costs, but only appeal costs; moreover, the sanction does not apply to failure to comply with an order but only to pursuing a frivolous appeal.

The Texas Constitution entitles virtually every party to a jury trial. Thus, unlike the Federal system and that of most States, jurors rather than judges decide the liability of companies for environmental damage and the amount of penalties to award in penalty cases. Review of the State superfund orders may also be before a jury.

Under a provision added in 1989, the TWC may request information and documents concerning a site from "any person," and it may take enforcement action if the information or documents are not produced in a timely manner.

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3. Texas trial practice requires that this amount be proven during the course of the trial itself, rather than in a separate action. This requirement may necessitate putting the State's lawyers on the witness stand during the trial. The Attorney General has sought fees under this procedure.

State Registry Procedure and Site Remediation Provisions[4]

Prior to the 1989 amendments, section 13(g) of the SWDA specifically authorized issuance of an order for sites placed on the State registry. The procedure for listing sites and issuing orders was not specified, so typically the TWC listed the site and issued an order requiring both an RI/FS and remedial action. In the 1989 amendments, however, the legislature established a detailed procedure for placing sites on the registry and issuing orders.

The TWC is required to publish annually an updated State registry identifying sites that may constitute an imminent and substantial endangerment to public health and safety or the environment due to the release or threatened release of hazardous substances. The registry must identify the relative priority for action at each facility. The registry may not include NPL sites. Under procedures enacted in 1989, the TWC must first determine if the site can be handled under RCRA-type authorities or pursuant to an agreed order under section 8(g) (361.272). If so, then notice must be published in the Texas Register that this action is in lieu of registry listing. If not, the site is evaluated for NPL or State registry listing. The 1989 amendments require the TWC to promulgate rules setting forth "minimum criteria" for listing.

After scoring the site, the TWC must publish notice of intent to list, solicit public comment, provide an opportunity to request a public meeting, and contact all known RPs. If a public meeting is requested, the TWC must give notice at least 30 days prior to the meeting. After the meeting or expiration of the period to request a meeting, the TWC must file a notice in the deed records of its intention to list the site. The TWC must offer all RPs the opportunity to conduct an RI/FS. RPs have 90 days from the date of the first notice to make a good faith offer, and 60 additional days to negotiate an agreed order. As an inducement, the law provides that no oversight costs may be charged to RPs who perform the RI/FS. If there are no good faith offers, if no agreed order can be achieved, or if the RPs fail to perform, then the TWC must conduct the RI/FS. It does <u>not</u> issue an order to compel RPs to perform an RI/FS.

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4. All of the requirements relating to the State registry and cleanup procedures are set forth in section 13 of the SWDA, as amended.

After the RI/FS, the Executive Director of the TWC selects a proposed remedial action, publishes notice of a public meeting, and mails notice to all RPs at least 45 days prior to the date of the meeting. The RPs have 60 days following the date of the meeting to make a good faith offer to fund or perform the remedial action. If a good faith offer is received, the parties have an additional 60 days to negotiate an agreed order. Again, no oversight costs may be charged to RPs who perform under an agreed order. After consideration of any good faith offers, the TWC issues its order, if no agreed order is reached, listing the site on the registry, prescribing the remedial action, and identifying the RPs. Any RP may appeal within 45 days, using the procedures applicable to 8(g) (361.272) orders. Notice of the registry listing is filed by the TWC in deed records.

If the RPs fail to perform, the TWC may carry out the remedial action using the Hazardous Waste Fee Fund. Where there are known RPs, the order is a prerequisite to the expenditure of Funds on remedial actions.

The law requires "selection of the remedial alternative which the State agency determines is cost effective (i.e. the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of the public health and safety or the environment)."[5] The TWC is to use applicable or relevant and appropriate standards in remedy selection, though it may waive such standards on the same bases as provided in CERCLA Section 121(d)(4).

If a release is causing irreversible or irreparable harm and its immediacy makes it prejudicial to the public interest to delay until the issuance of an order, the TWC may undertake an immediate removal action with Fund monies. This action may be judicially reviewed under a "substantial evidence" standard.[6]

Where Fund monies are spent, the State has a lien on the property cleaned up. In addition, the TWC may file an action for cost recovery against RPs who fail to comply after the completion of all remedial action. The TWC may also recover civil penalties of

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5. Section 13(i), as amended.

6. Section 13(g) as amended in 1989.

up to $10,000/day, and may recover up to double the State's costs if the court finds the RP's defenses "unreasonable, frivolous, or without foundation." [7]

The statute includes provisions for mixed funding and *de minimis* settlements.

Spill Act

Under the Texas Water Code, persons who spill hazardous substances into the waters of the state (including groundwater) must report the discharge and clean up the discharge.[8] The Hazardous Substances Spill Prevention and Control Act also provides for a cleanup fund--the Spill Response Fund. The Spill Act also has a double cost recovery provision that applies if any person fails to clean up a spill after being directed to do so by the TWC.

III. ORGANIZATION

The Texas Water Commission has jurisdiction over all water resources including groundwater and has specific jurisdiction over industrial solid and hazardous waste and municipal hazardous waste, as well as jurisdiction over the release of hazardous substances to water or land.

The Commission consists of three members appointed by the governor for six-year terms. Operations are overseen by an executive director, who reports to the Commissioners. The Hazardous and Solid Waste Division within the TWC has responsibility for solid waste, RCRA, LUST, and superfund matters. The Division has four sections. Two sections have some responsibility for superfund-type matters.

The Contract Remedial Activities Section with 27 staff has responsibility for state and federal superfund activities, emergency response, and LUST contracts. See Figure TX-1.

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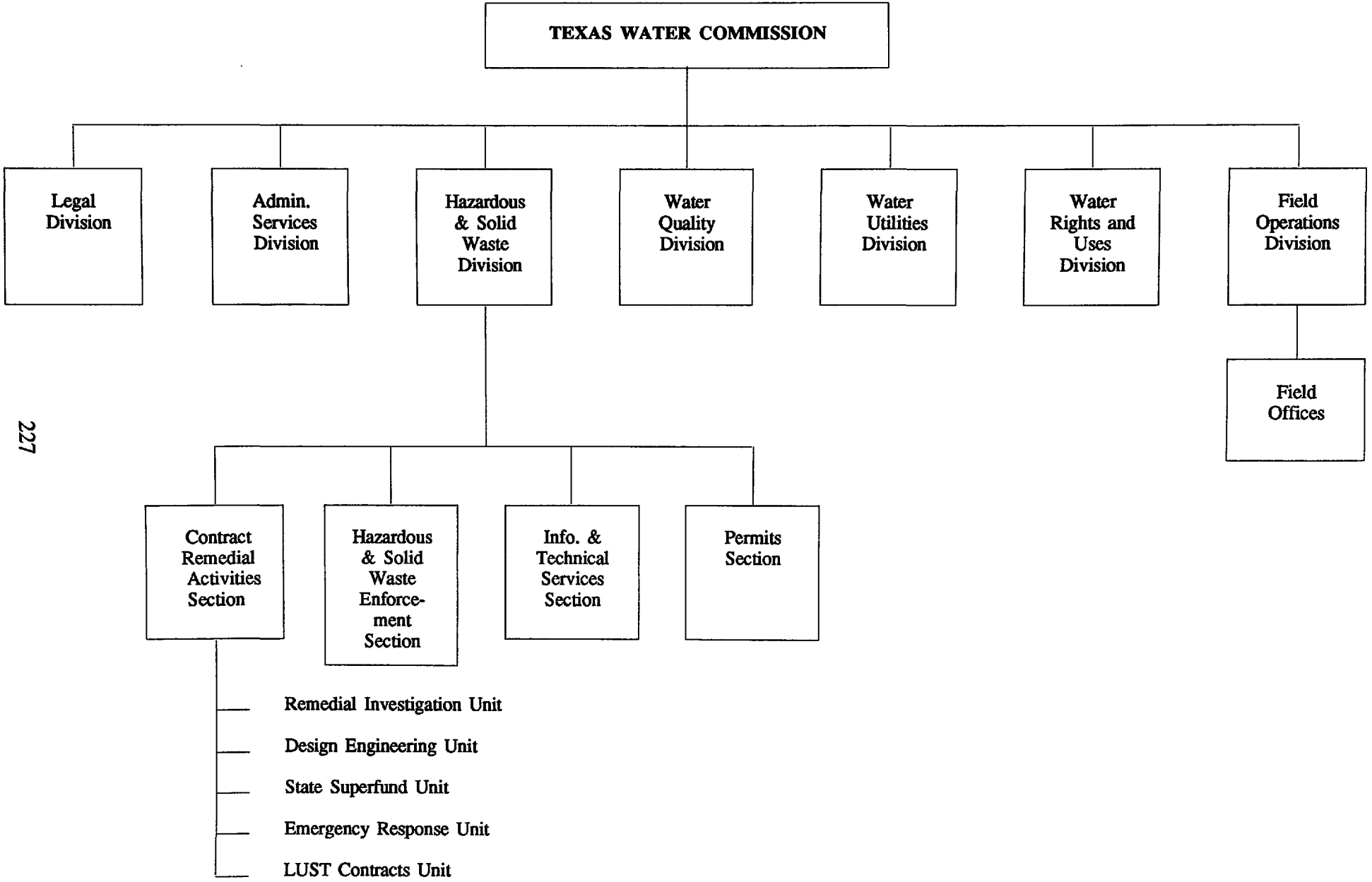
7. Section 13(j),(m),(n), as amended.

8. Texas Water Code Section 26.121 *et seq.*

FIGURE TX-1


TEXAS WATER COMMISSION
Legal Division
Admin. Services Division
Hazardous & Solid Waste Division
Water Quality Division
Water Utilities Division
Water Rights and Uses Division
Field Operations Division
Field Offices
Contract Remedial Activities Section
Hazardous & Solid Waste Enforce-ment Section
Info. & Technical Services Section
Permits Section
Remedial Investigation Unit
Design Engineering Unit
State Superfund Unit
Emergency Response Unit
LUST Contracts Unit

The Enforcement Section also has responsibilities related to the program. It handles sites before they are referred to the State superfund program--attempting to secure compliance using the TWC's order authorities, including RCRA-type authorities as well as 8(g) (361.272) orders. In addition, a Closure Unit within the Enforcement Section has responsibility for overseeing closure of solid and hazardous waste units.

The TWC has a Legal Division with 17 lawyers. One of these is assigned to the State superfund program. Others may handle administrative enforcement cases brought by the Enforcement Section in the Division of Hazardous and Solid Waste. The Legal Division provides legal counseling, contract review, and representation in administrative cases. It does not litigate appeals or other matters in court.

All litigation is handled by the Attorney General's Office. The Environment Section has 17 lawyers to handle a docket of approximately 500 cases. This docket includes approximately 50 hazardous waste cases; nearly all of these were referred prior to 1985 except for the State superfund order appeals. Referrals of hazardous waste enforcement cases other than State superfund cases have virtually ceased since the advent of administrative penalty authority in 1985.

Several other departments and commissions have responsibilities related to hazardous waste sites. The Department of Health is responsible for municipal waste, radioactive waste and medical waste. The Railroad Commission has exclusive jurisdiction over wastes related to oil and gas exploration, development, and production but not refineries or transportation spills into the waters of the State. These agencies meet quarterly with the TWC but thus far have referred no sites for action under State superfund.

Staff Capabilities

The TWC has taken State-lead on virtually all of the Fund-lead NPL sites and none of the enforcement-lead sites. EPA Region 6 is handling all enforcement-lead sites. The State-lead NPL sites are handled by the Remedial Investigation Unit, which also performs PA/SIs, and the Design Engineering Unit in the Contract Remedial Activities Section. Most of the State-lead NPL sites are in the remedial design, remedial action, or operation and maintenance phases. The NPL portion of the TWC appears adequately staffed and to have sufficient resources to carry out these tasks.

The State "superfund" program for non-NPL sites is handled entirely by the State Superfund Unit in the Contract Remedial Activities Section. The Unit is staffed by one supervisor and four project managers. It is responsible for the 29 sites on the State registry plus one additional site where an agreed order was reached prior to listing. These five staff have exclusive responsibility for all enforcement, litigation support, RP identification, contract drafting, contracting, oversight, public meetings, negotiation, sampling, technical decisions, and the remaining activities at the 30 sites. Because there is no field support or technical support, all actions, including taking the samples, must be performed by the project managers themselves. There is no capacity to do RP searches. The Unit is seriously understaffed for its caseload and receives no technical support from other parts of the TWC. The Unit has high turnover--four staff departures in one and one-half years--with most going to consulting firms. Although the Unit was budgeted to expand to nine positions in FY 1989, the TWC did not fill these positions. The Unit is budgeted for these same additional positions in FY 1990.

Based on our interviews with various TWC personnel, it is evident that most managers and staff view the 1989 amendments to the SWDA as an opportunity to refer more cases to the State Superfund Unit, particularly as a way of clearing dockets and dealing with cases with insolvent owners/operators. There is no general recognition that the current staffing of the Unit is insufficient to handle the entire 30-site caseload on its current docket.

IV. FUNDING

Virtually all of the environmental protection programs of the TWC are funded by a combination of (1) EPA grants, and (2) fees imposed on some segment of the Texas business community. The legislature prefers to avoid appropriation of general revenues for regulatory functions. The Texas superfund program is no exception. Funding for TWC activities on federal NPL sites comes primarily from EPA grants, except for the 10% State match, which comes from the Hazardous Waste Fee Fund. Funding for the State superfund program comes entirely from the Fund.

The TWC has substantial multisite cooperative agreements and individual cooperative agreements with EPA because of its State-lead role on virtually all of the Fund-lead NPL sites in Texas. In addition, it receives a CORE grant and management assistance grants related to its oversight of work on two federal facilities and the other sites. The entire administrative costs for the Contract Remedial Activities Section, except for the State Superfund Unit, are covered by EPA grants.

The Hazardous Waste Disposal Fee Fund is the source of funds for the State Superfund Unit and the 10% match on Fund-lead NPL sites. Salaries and other administrative costs for the Unit have been paid from the Fund.

The Hazardous Waste Disposal Fee Fund, usually called "Fund 550" in TWC parlance because of its administrative designation as one of the special funds for TWC programs, is established by section 11a (361.133) of the SWDA. It consists of fees collected for disposal of hazardous waste on land--$10/dry weight ton. The fee is collected quarterly on the previous quarter's disposal. It may be adjusted by the TWC to produce sufficient revenues to meet obligations.

The balance in the Fund as of the end of FY 1989 (i.e., August 31, 1989) is approximately $21.7 million, of which approximately $13 million is unobligated. Annual revenues to the Fund from the disposal fees are recorded (and projected) in Table TX-1.

TABLE TX-1
Fund 550 Revenues from Disposal Fees

FY 1987	$5.5m
FY 1988	7.9m
FY 1989	7.5m
FY 1990	7.5m
FY 1991	7.0m

In addition to disposal fees, the Fund may receive interest on late fee payments at the rate of 15%, penalties for failure to pay fees, and any cost recoveries. In 1989, amendments to the SWDA provided two new sources of revenue. First, beginning September 1, 1989, the

Fund will retain interest earned on the Fund balance.[9] Retained interest is projected to generate approximately $1.8 million in FY 1990, and $1.0 million in FY 1991 (as the Fund begins to be expended). No projections have been made for subsequent years. Second, the legislature enacted a new fee on "commercial" hazardous waste storage, processing, and disposal facilities. The fee does not apply to "captive" facilities unless the hazardous waste is handled for a fee and is shipped from offsite. The new commercial hazardous waste fee is not to exceed $20/ton if landfilled; however, a higher amount may be assessed against waste originating out of State based on certain listed factors. The new fee is expected to generate approximately $2.0 million/year, half of which is allocated to the Fund.[10]

In summary, the Fund will receive annual revenues of approximately $9.0 million/year. State CERCLA match requirements are projected at approximately $5 million/year through 1994. Some fairly expensive remedies are projected down the road, and O & M costs will be high at a few NPL sites. Costs for State registry sites are not yet projected. Remedial action costs at several of these sites may far exceed the Fund balance, however.[11] Drawdown of substantial monies for State registry sites over the short term is unlikely because of (1) insufficient staffing to handle all of the sites currently on the registry, (2) a primary focus on sites with RPs, (3) the need to do RI/FSs on the Fund-financed sites, none of which have commenced yet. In FY 1989 the State Superfund Unit spent only $140,000 of Fund monies; only $798,000 is budgeted for State registry sites for FY 1990. Over the short term, the Fund will be able to meet its obligations. Over the long term, it is questionable, in part because all three of the revenue sources (the disposal fee, the commercial fee, and interest on the Fund balance) are going to decline over time. While the TWC may adjust the fees to meet obligations, it is not clear if this will be possible if the purpose is to do remediation at a few costly State sites.

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9. Acts 1989, Ch. 703, Sec. 4, p. 3218.

10. SWDA Section 12(e),(f) as added by Acts 1989, 71st Leg., Ch. 1144, Sec. 4, p. 4727.

11. E.g., the Gulf Metals site, which has an insolvent owner and no other identified RPs, may cost $69 million to remedy based on preliminary assessments.

The effect of cost recovery is unknown. On the NPL side, the State is only doing Fund-lead sites. The potential for recovery has not been assessed, and the federal government is likely to take lead. On the State registry side, the 1989 amendments provide that no oversight costs may be recovered from RPs who agree to do RI/FSs or remedial actions. Thus, cost recovery is likely only if there is a recalcitrant RP. The TWC did receive $19,000 in cost recovery funds when it turned over the Rio Grande site from the State registry to the EPA for enforcement after the site scored enough for NPL listing.

The Spill Response Fund is used for emergency responses where discharge to the waters of the State can be shown. In 1989, the Spill Fund was extended to cover spills "having a potentially harmful effect on waters in this state."[12] The Spill Fund may only be used when the discharger and the federal government both decline to expend money to clean up the discharge. The Fund was established with an initial authorization of $1 million, but the actual monies available for expenditure must be appropriated year-by-year--usually $200,000-300,000. Actual expenditures from the Spill Fund are lower than these appropriated amounts, averaging about $100,000 annually. The Spill Response Fund had a balance of $628,000 at the end of FY 1988 and $557,000 at the end of FY 1989. The legislation allows the Spill Response Fund to be replenished from penalties for failure to report spills or to clean up spills, but because the law also prohibits use of the fund for administrative expenses, there was never an effort to assess or collect penalties. The law also provides for recovery of double the response costs incurred by the TWC if a party fails to clean up a spill when directed to do so. No such double recoveries have occurred. A cap of $5 million on the recovery of costs from any party was removed by amendment in 1989. The Spill Fund itself has an absolute $5 million cap, which is unlikely to be approached given the limited ways of replenishing the fund, and its current balance.

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12. Texas Water Code Section 26.266(c), as amended by S.B. 1222, Acts of the 71st Legislature, Regular Session (1989).

V. REMEDIATION PROCESS

NPL Sites

Texas took State lead on 15 of 16 Fund-lead NPL sites in the State. Virtually all of these are now in the remedial design, remedial action, or operations and maintenance phase. Remedial construction is complete at four sites. Figures TX-2 and TX-3 show the locations of Texas NPL sites.

State Registry Sites

In 1987, the TWC placed ten (10) sites on the State registry, and issued section 8(g) orders to RPs at seven of the sites. Of the other three sites, one negotiated a removal action (and was later placed on the NPL) and two involved private individuals with minimal assets and unknown RPs. The seven (7) orders all directed the RPs to conduct an RI/FS and to submit and carry out remedial action plans. The RPs at two sites negotiated agreed orders--one for the entire process, one for just the RI/FS. The RP at one site simply ignored the order. The RPs at the four remaining sites all filed appeals in court--automatically staying the orders. It became clear that the process could be stalled out simply by filing an appeal.

It also became apparent that because there had been no detailed process for listing the sites--the Commission had simply given notice to RPs, held a public meeting, and issued the orders--the trial record would be somewhat thin, thus jeopardizing the potential validity of the orders. This was of concern not only because of the prospect of losing the cases and having no RPs to look to for remediation, but also because of the possibility that the State might have to pay the fees and expenses of the RPs if any of them prevailed.[13] This was no idle concern; the evidence linking at least one RP to one site was extremely tenuous at the time the order was issued. The State subsequently dismissed the order issued to that RP, but only after securing the agreement of the RP to waive all claims against the

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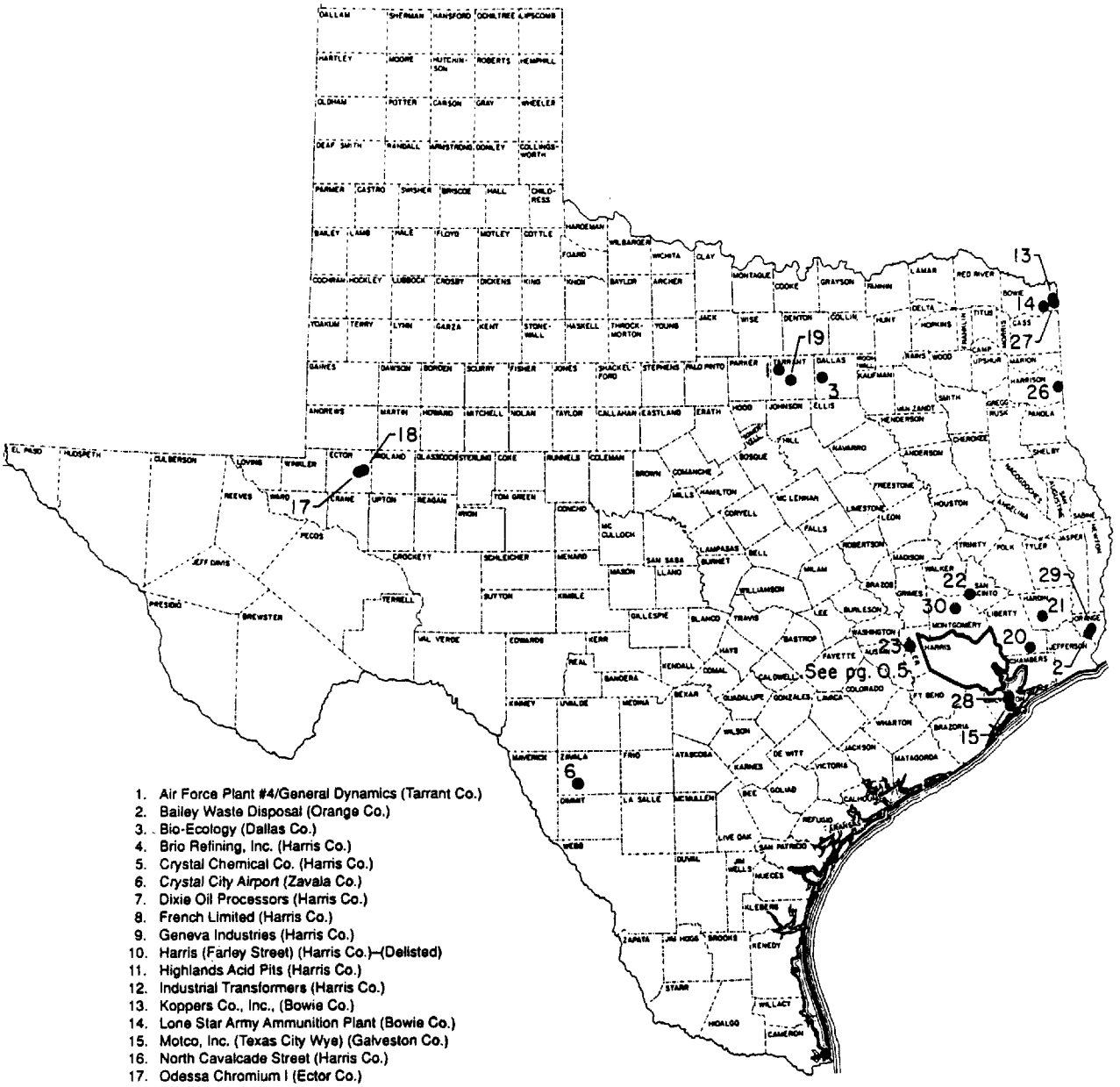
13. Under the 1989 amendments, the order is not issued until after the RI/FS has been completed. This reduces the possibility of an order based on insufficient evidence, and hence reduces the State's exposure to liability to PRPs.

FIGURE TX-2

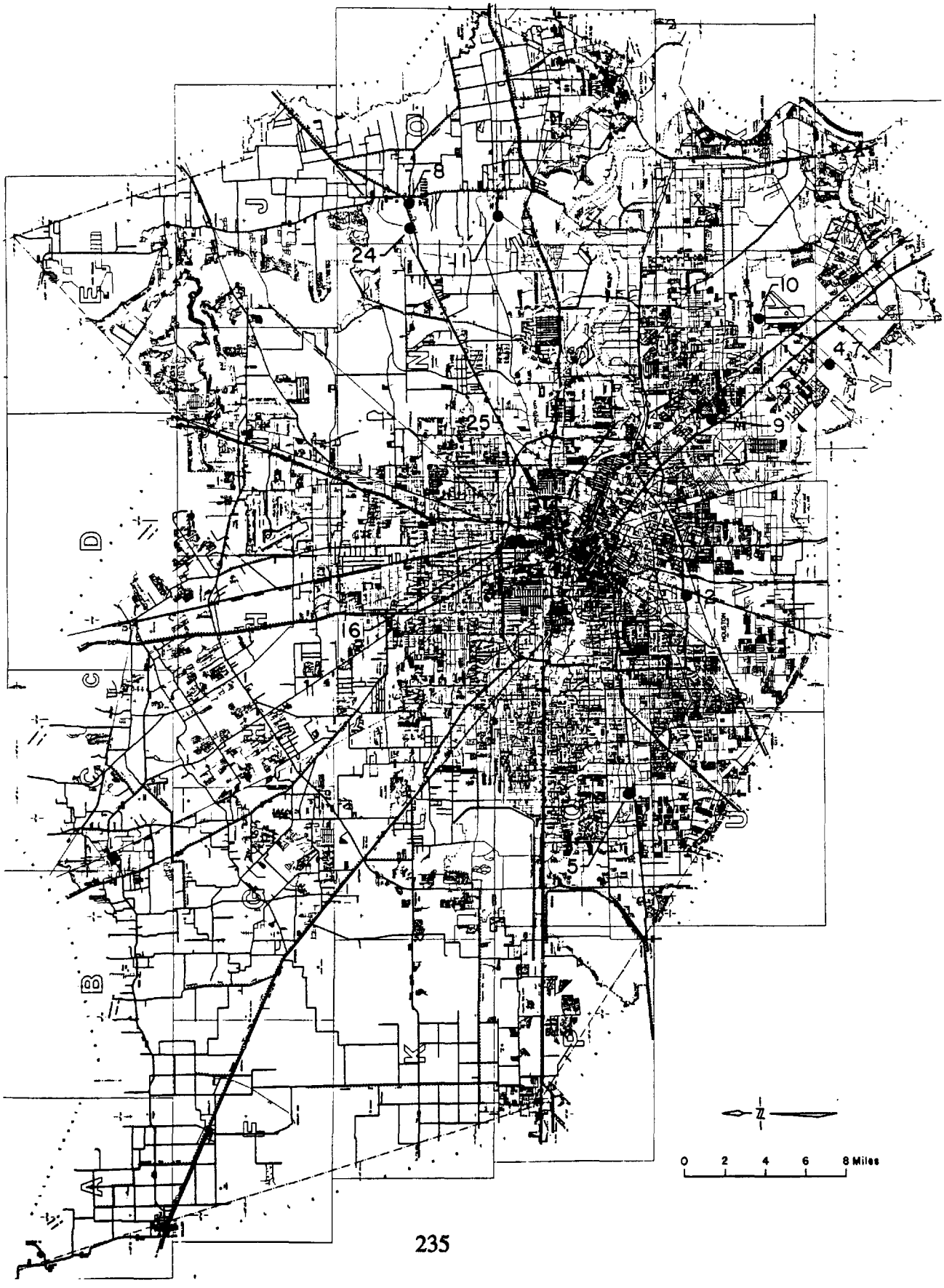
TEXAS NATIONAL PRIORITY LIST (NPL) SITE MAP



1. Air Force Plant #4/General Dynamics (Tarrant Co.)
2. Bailey Waste Disposal (Orange Co.)
3. Bio-Ecology (Dallas Co.)
4. Brio Refining, Inc. (Harris Co.)
5. Crystal Chemical Co. (Harris Co.)
6. Crystal City Airport (Zavala Co.)
7. Dixie Oil Processors (Harris Co.)
8. French Limited (Harris Co.)
9. Geneva Industries (Harris Co.)
10. Harris (Farley Street) (Harris Co.)–(Delisted)
11. Highlands Acid Pits (Harris Co.)
12. Industrial Transformers (Harris Co.)
13. Koppers Co., Inc., (Bowie Co.)
14. Lone Star Army Ammunition Plant (Bowie Co.)
15. Motco, Inc. (Texas City Wye) (Galveston Co.)
16. North Cavalcade Street (Harris Co.)
17. Odessa Chromium I (Ector Co.)
18. Odessa Chromium II (Ector Co.)
19. Pesses Chemical (Tarrant Co.)
20. Petro-Chemical Systems, Inc. (Turtle Bayou) (Liberty Co.)
21. Rio Grande Oil Company Refinery (Hardin Co.)
22. San Jacinto Pits (Pig Road) (San Jacinto Co.)–(Delisted)
23. Sheridan Disposal Service (Waller Co.)
24. Sikes Disposal Pits (Harris Co.)
25. South Cavalcade Street (Harris Co.)
26. Stewco, Inc. (Harrison Co.)
27. Texarkana Wood Preserving (Bowie Co.)
28. Tex-Tin Corporation (Galveston Co.)
29. Triangle Chemical Co. (Orange Co.)
30. United Creosoting Co. (Montgomery Co.)

FIGURE TX-3

HOUSTON AREA NPL SITE MAP



State.[14] The fees and expenses provision has been used against the State in non-superfund enforcement cases. For example, in 1987 a judge in East Texas dismissed a TWC enforcement suit against a wood treating operation and assessed $155,000 against the State. The dismissal and award were later reversed on appeal.[15]

The original 8(g) orders had been issued without a thorough search for other RPs; thus the Attorney General's office had to include additional RPs as they were discovered. None of the cases had been tried as of August 1989 when this research was conducted. The TWC was actively engaged in additional sampling and investigation of the sites in an attempt to prepare for trial.

Because of the problems occasioned by RP appeals, the TWC adopted a different approach for the 17 sites added to the registry in 1988 and the one site added in 1989.[16] Instead of simply listing the sites and issuing orders, the TWC invited the known RPs to come in for informational meetings, and offered them the opportunity to do voluntary RI/FSs. The RPs at six of the sites are performing RI/FSs under this arrangement. The remainder are still negotiating, are insolvent, are not being dealt with due to lack of staff, or have not been located. One mercury reclaiming site was issued an 8(g) order after the operator declared bankruptcy.

During the summer of 1989, the State Superfund Unit prepared contracts for Fund 550 actions at four (4) State registry sites. Two of these are sites listed in 1987 where the landowners are impecunious individuals and the RPs are unknown. Another is a battery breaker site listed in 1987 that ignored an 8(g) order; and one is the bankrupt mercury reclaiming operation. Contracts awaiting approval are for RIs at these sites.

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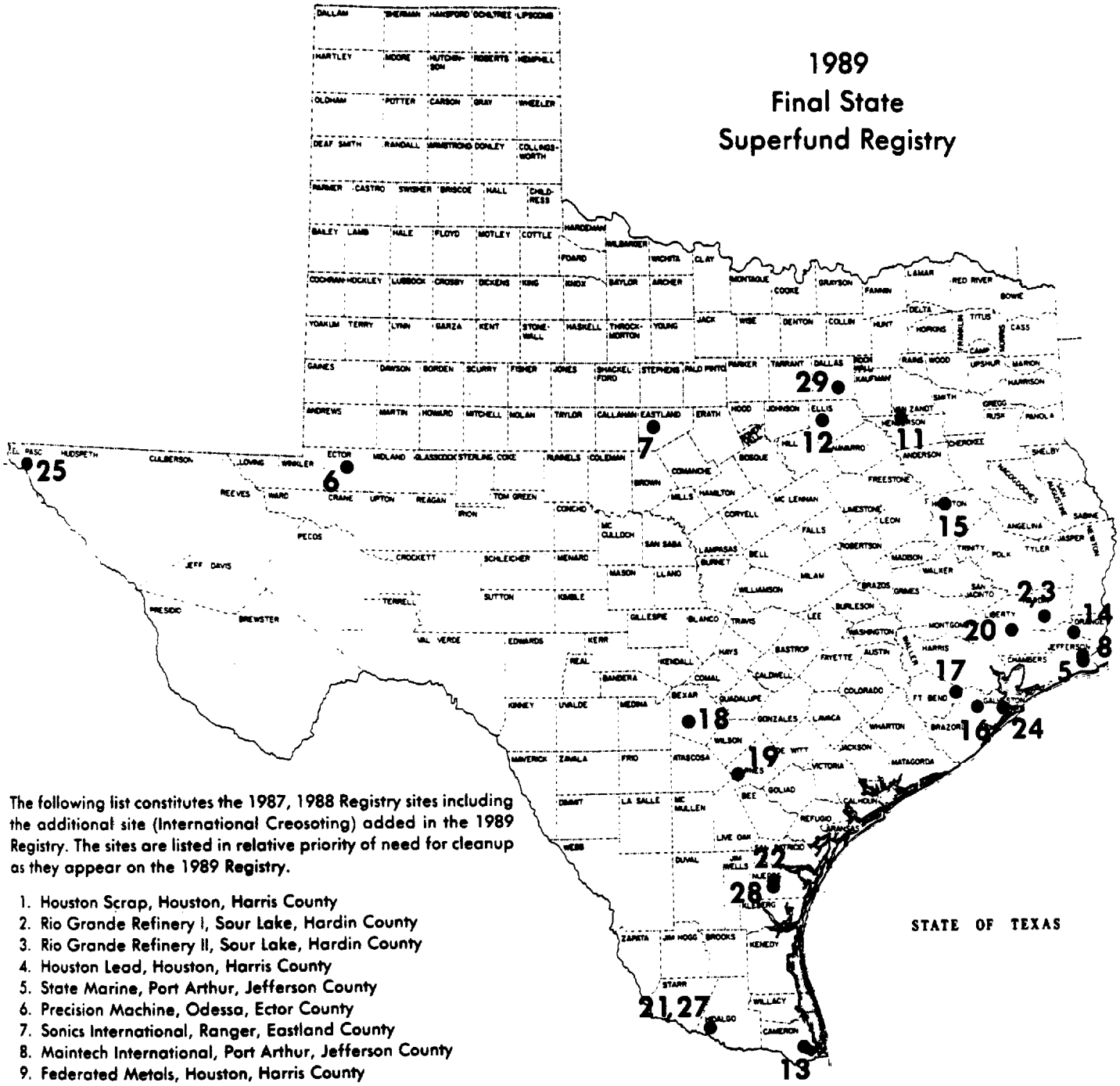
14. Lambda Electronics Power Supplies v. Texas Water Commission, (Dist. Ct. Travis Cty., October 17, 1988). Also Hoechst Celanese Chemical Group, Inc., v. Texas Water Commission, No. 438,316 (201st Dist. Ct. Travis Cty., October 4, 1988).

15. State v. Hart, 753 SW 2d 213 (Tex. App. Beaumont, 1988).

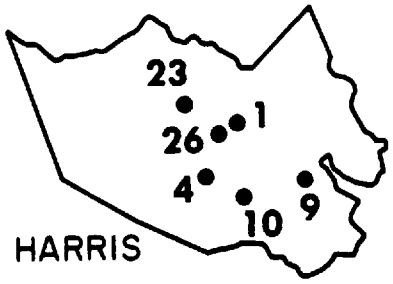
16. The total complement of 29 sites (Figure TX-4) is accounted for by the fact that one of the initial ten sites was split into two in the subsequent registry updates.

FIGURE TX-4



The following list constitutes the 1987, 1988 Registry sites including the additional site (International Creosoting) added in the 1989 Registry. The sites are listed in relative priority of need for cleanup as they appear on the 1989 Registry.

1. Houston Scrap, Houston, Harris County
2. Rio Grande Refinery I, Sour Lake, Hardin County
3. Rio Grande Refinery II, Sour Lake, Hardin County
4. Houston Lead, Houston, Harris County
5. State Marine, Port Arthur, Jefferson County
6. Precision Machine, Odessa, Ector County
7. Sonics International, Ranger, Eastland County
8. Maintech International, Port Arthur, Jefferson County
9. Federated Metals, Houston, Harris County
10. Gulf Metals, Houston, Harris County
11. Wortham Lead Salvage, Eustace, Henderson County
12. Texas American Oil, Midlothian, Ellis County
13. Niagara Chemical, Harlingen, Cameron County
14. International Creosoting, Beaumont, Jefferson County
15. McBay Oil and Gas, Grapeland, Houston County
16. Aztec Mercury, Alvin, Brazoria County
17. Solvent Recovery Services, Arcola, Fort Bend County
18. Harris Sand Pits, Von Ormy, Bexar County
19. Butler Ranch, Karnes County
20. Pip Minerals, Liberty, Liberty County
21. Hayes-Sammons Warehouse, Mission, Hidalgo County
22. Baldwin Waste Oil, Robstown, Nueces County
23. Waste Oil Tank, Houston, Harris County
24. Hall Street, Dickinson, Galveston County
25. Unnamed Plating Site, El Paso, El Paso County
26. La Pata Oil, Houston, Harris County
27. Munoz Borrow Pits, Mission, Hidalgo County
28. South Texas Solvents, Banquete, Nueces County
29. Bestplate, Hutchins, Dallas County



The TWC is experiencing substantial delays in contracting for Fund 550 action on State registry sites, primarily because of internal review requirements, and the fact thatState registry sites have a much lower administrative priority than contracts for NPL work, because of the need to satisfy EPA and keep the Federal funds flowing.

Other State Sites

A number of sites have been handled by portions of the TWC other than the State Superfund Unit. These have been addressed by the Enforcement Section under 8(g) orders. The Century Forest site involved a former wood preserver cited for RCRA violations and ordered to close. The wood preserver failed to comply, but the lessor of the land--the Angelina and Neches River Railroad--agreed to a closure plan under an 8(g) order in 1987. Similarly, in December 1988, the TWC issued an 8(g) order to five RPs for cleanup activities at a chemical plant site that had been closed in the mid-1970s but redisturbed by subsequent activities. It is possible that such orders will continue to be used in the future without the formal listing process set out in the new amendments. Indeed, section 13 seems to contemplate the opportunity for RPs to agree to actions under 8(g) (361.272) to forestall listing. What remains uncertain is whether unilateral 8(g) orders will continue to be issued independent of the detailed superfund process.

Implications of New Superfund Process Under 1989 Amendments

It is evident that the 1989 amendments were meant to codify what was already beginning to happen, as well as to avoid some of the pitfalls encountered with the first round of listed sites. First, the amendments were aimed at allowing RPs to avoid listing and the "superfund" process entirely by agreeing to 8(g) (361.272) orders. Second, the amendments provide that even if the process is initiated, RPs must have the opportunity to perform the RI/FS without having to agree to liability for remediation (essentially what happened to the 1988-listed sites). Third, the prospect of appeals stalling out the process is avoided by eliminating the order to do an RI/FS; if the RPs decline to volunteer, the TWC must perform the RI/FS itself. Fourth, the listing comes much later in the process--after remedy selection; this provides a better record in the event of an appeal. Fifth, the process builds in a significant number of opportunities for public and RP participation.

Despite these changes, it is not clear that the program has been improved in significant ways.

TWC staff assert that RPs are more likely to perform an RI/FS if not under the coercion of an order. The issue, however, will be what sort of RI/FS they will agree to. If they know that the alternative is a State-funded RI/FS and contracting remains slow (or budget allocations of the Fund to the State Superfund Unit remain limited) RPs may have a strong bargaining position. It is true, however, that appeals at the RI/FS stage have been eliminated by doing away with the order at this stage.[17]

The TWC staff also assert that there are strong incentives not to appeal remedial action orders under the new system. They cite (1) the fact that oversight costs are assessed against nonsettling RPs but not against settling RPs, (2) the availability of double costs for frivolous appeals, and (3) the availability of administrative penalties for violation of an order. However, the oversight costs are essentially trivial, based on current experience with the existing State registry sites where RI/FSs are underway. Thus, this is an insignificant incentive. Also, an award of double costs is available only if an RP's appeal is "frivolous, unreasonable, or without foundation." Because any party may assert "divisibility" of the liability on appeal, virtually no appeals will fall into these categories. Finally, if a party appeals, it is not in violation of the order--penalties are assessable only from the point at which an order becomes unappealable. Thus, there are few incentives <u>not</u> to appeal a remedial action order.

Even the double damages available for noncompliance with a remedial action order are unlikely to provide an incentive not to appeal. They may be awarded only if the court determines in a cost recovery action that the failure to comply with the order was "unreasonable, frivolous, or without foundation." It is unlikely that a Texas court will hold that the filing of an appeal authorized by statute meets this standard--particularly if the appeal itself is based on a non-frivolous ground such as seeking to establish divisibility and to apportion liability among RPs. Moreover, the double damages provision does not even apply unless and until the State actually gives up waiting for the outcome of an appeal,

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17. If the RPs hold out for a weak or inexpensive RI/FS, the TWC may be placed in a dilemma. If it performs the RI/FS, the RPs will want to escape liability for the expense of the RI/FS, and will seek such a provision in later negotiations over the RD/RA.

takes the remedial action itself, and sues for cost recovery---an approach that is disfavored because of the preference for conserving the Fund.[18]

Also, it appears that the TWC has no ability simply to elect to perform remedial actions without first issuing an order where there are viable RPs. This apparent limitation, in effect, invites appeals. It makes the Texas program unlike some other State superfund programs that allow the State to do Fund-lead actions in lieu of an order and thereby place RPs on the horns of a dilemma--*viz.* whether to agree to a remedial action, or to accept the risk of paying for the State's remedial action after the fact.

The core weakness in the Texas statute remains the availability of pre-enforcement review by appeal of any remedial action order. The incentive will always be to appeal, unless the RP can get a "good deal" from the State. This incentive is strengthened by the fact that the State is itself subject to costs and expenses if it loses. None of this is to suggest that there will be great numbers of appeals. In all likelihood, settlements will occur; but the statute gives a substantial amount of leverage to the RPs in settlement discussions, notwithstanding the 1989 amendments.

Undoubtedly the time periods for "good-faith offers" built into the 1989 amendments were designed to foster settlement and expedient action. However, the viability of the State's leverage is most dependent upon its ability to spend Fund monies quickly if the RPs elect not to cooperate. The State's capacity to do so remains uncertain at this time, not only because of the legal constraints discussed above, but also until (1) staffing is increased, and (2) State superfund achieves a higher priority within the TWC. Under the statutory timetables, 150 days are specified for RI/FS negotiations, and 165 days for RD/RA negotiations (including meeting notice requirements), with periods in between for performance of actions (such as the RI/FS and selection of remedy) and issuance of determinations thereafter. Contracting for State-funded actions will require additional time over

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18. Such a Fund-lead approach may also be impeded by Section 13(g)(1), which authorizes State-funded removals pending an appeal, but which does not address remedial actions at that time. The high threshold standards--"immediacy" and "irreversibility"--required even to conduct a removal pending appeal will provide ammunition to RPs wishing to argue that the State may not conduct Fund-lead remedial actions during an appeal.

and above this. The ability of the State to act quickly will influence the quality of settlements it may obtain.

Public Participation

There was little formal public participation under the initial version of the State superfund program. Essentially the only opportunity for participation was the public meeting at which the TWC considered the executive director's petition to list a site or sites on the registry and issue an order. The bulk of the participation has been by the RPs. Under the 1989 amendments, there are significant opportunities for public input, and requirements that notices of opportunities to comment and to request public meetings be published in newspapers as well as in the Texas Bulletin. The public participation requirements of the law appear to be as complete, if not more so, than CERCLA, with the possible exception of health and risk data communication, which is not specifically provided for.

Cleanup Standards

State superfund has not yet developed State cleanup standards, but is likely to apply the same standards applied to NPL sites, most of which are in the remediation phase. The Contract Remedial Section reports concurrence with EPA on all of the remedies selected for NPL sites in Texas thus far. The State applies water quality standards (where it reports it has nothing more stringent than MCLs), and air quality criteria. Under most State RCRA cleanups and closures, the TWC has insisted on cleanup to background or MCLs, whichever is less stringent. The TWC has taken the position in the past that groundwater must be protected for future uses as well as existing uses; however, it has also accepted EPA groundwater remedies at NPL sites that make use of classification schemes based on use. The TWC expects to use risk assessments where there are no other standards available.

Emergency Response

The TWC operates an emergency response program, which is housed in the Contract Remedial Activities Section. It has a staff of four. In FY 1988 it received 1800 calls.

Under the State's detailed contingency plan, handlers of oil and hazardous substances are encouraged to notify directly the local office and/or agency (e.g., Railroad Commission for oil and gas production spills) with jurisdiction over the event. There are about 120-160 responses per month required; most of these are handled by the reporting entity. The State's Spill Response Fund is used only about once per month on average. The State will not use the Spill Fund unless it gets a refusal from the RP, local government, and EPA to conduct the cleanup. The State has contractors on board for immediate response; the staff needs only to prepare a justification document and get signoff. The Hazardous and Solid Waste Division Director may authorize expenditures up to $25,000; higher amounts must be authorized by the TWC Executive Director.

The Emergency Response Unit maintains a computer database of response contractors to provide assistance to RPs seeking contractors. It also has a database of chemicals and their handling requirements.

VI. PROGRAM OUTLOOK

The Texas program for non-NPL sites is addressing a very limited number of the hazardous sites in Texas at which cleanup may be required. Its staff size and staff retention will need to be improved if Texas is to deal effectively even with the 29 sites currently on the State registry. Absent assistance in this area, the non-NPL program may not accomplish its objectives.

Fund 550 was strengthened by the 1989 amendments. Nevertheless, it may not be sufficient to clean up orphan sites on the State registry if all CERCLA match obligations are met. Additional revenues will be needed if the State registry is increased.

The new procedures to encourage settlement will probably result in a greater number of settlements than under the law prior to the 1989 amendments. This does not necessarily mean that better results will be obtained. For example, under the 1989 amendments, if RPs decline to perform the RI/FS, the State must do so; the State can no longer unilaterally order the performance of an RI/FS. However, there are no punitive damages or penalties associated with this choice by the RPs. This may place substantial bargaining power in the hands of RPs. Likewise, at the remedial action phase, RPs still

retain the leverage of threatening to appeal remedial action orders to court. This will affect the relative bargaining position of the State and may influence the negotiated remedy.

Finally, it is likely that many more than 29 sites will require State attention under superfund authorities over the long term. Adequate site discovery and evaluation efforts, and an expanded State superfund staff will be necessary to keep pace with the likely need.