

A HANDBOOK FOR STATES ON THE USE OF
COMPENSATION AND INCENTIVES IN THE
SITING OF HAZARDOUS WASTE MANAGEMENT
FACILITIES

DRAFT ONLY

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SECTION 1

INTRODUCTION

1.1 PURPOSE OF THIS HANDBOOK

Recent discoveries of abandoned hazardous waste sites across the country have dramatized the need for environmentally sound hazardous waste management facilities (HWMFs). Despite this need, States and the private sector have experienced considerable difficulty in securing local acceptance of HWMFs. Opposition is strong and is intensified each day by new "Love Canal" revelations across the country.

There are techniques available to deal equitably and legitimately with public opposition. The purpose of this handbook is to supply State governments with alternative techniques for dealing with the HWMF issues that stimulate community concern and public opposition. This handbook serves as an introduction to the concepts and possible uses of mitigation, compensation and incentives as tools in the siting of HWMFs. In addition to explaining these techniques, this handbook explores some of the major issues and problems associated with their application. The handbook is written from two perspectives: States may directly provide mitigation, compensation, and incentives to deal with HWMF impact issues; or, States may require the private sector developers of HWMFs to provide these techniques themselves. In order for States to exercise either option, they should have some information on different techniques and on the

issues associated with these techniques. This handbook is designed to provide that information.

A strong note of caution is appropriate at this point: the impact responses described in this handbook will have limited usefulness in many hazardous waste siting situations. HWMFs induce issues accompanied by highly emotional feelings which, in many cases, belie the use of the techniques described below. While the reader's skepticism about these techniques is justified, the handbook will attempt to show how these techniques can be very valuable in dealing with HWMF impact issues.

The handbook emphasizes compensation and incentives. This emphasis is deliberate. Mitigation techniques are much more familiar to States, and, in fact, are already required in the HWMF siting processes being developed by many States. There is also no attempt in the handbook to prescribe a recommended blueprint for States to follow. HWMF siting situations and the impacts associated with them are very site-specific. The handbook will not recommend a specific set of compensation and incentives for certain types of communities. Rather, the handbook suggests types of techniques for different impact issues. Most importantly, the handbook will provide States with a framework for considering and evaluating different techniques.

1.2 HAZARDOUS WASTE FACILITY IMPACT ISSUES AND PUBLIC OPPOSITION

Overcoming public opposition is a critical factor in the siting of HWMFs in the United States. Public opposition to HWMFs stems from a number of potential impacts associated with these facilities. These impacts concern environmental quality, health, quality of life, economic issues and public service burdens. Impact issues occur as a result of the construction, operation and long-term maintenance of a facility.

The principal impact issues associated with the construction, operation long-term maintenance of a facility include:

- Traffic - Increased traffic from waste haulers and employees of the facility; increased possibility of traffic accidents and spills; wear on local roads
- Noise - Created by facility construction and operation, and by increased traffic
- Ground and Surface Water Pollution - At the site during operation and/or disposal and off-site from transport spills
- Air Pollution - Emissions from incinerators; fugitive dust from landfills
- Odors - From transport, processing, and storage of wastes
- Aesthetic Changes - Particularly from incinerators
- Risks - Health and environmental risks associated with accidents, explosions, leaks, or spills during the operation of a HWMF or during transport of wastes to a facility; and during the post-closure period.
- Property Values - Decreased property values; of primary importance to landowners in the immediate vicinity of the HWMF or along routes heavily travelled by transport vehicles
- Public Services - Increased burdens for highway maintenance; for fire and emergency spill response; for facility inspections and monitoring
- Community Stigma - Resulting from the presence of a HWMF; this may have higher order impacts as well, such as quality of life losses and even effects on population movements.

While public opposition often centers on identifiable potential impacts of HWMFs, it is clearly not always a rational process. The unknown risks associated with HWMFs often create an attitude of fear and mistrust. The public emphasizes the uncertainty of risks, and questions the ability of government, industry officials or anyone to assure long-term safety.

1.3 RESPONSES TO HWMF IMPACT ISSUES: DEFINITIONS AND EXAMPLES

The construction of a HWMF involves costs and benefits to individuals, groups, the community and society as a whole. Some of the benefits associated with a HWMF include acceptable disposal for society and profits for the private sector. If one views the facility impacts as economic costs, mitigation, compensation and incentives may be used as responses to these costs. In broad terms, these impact response techniques are means for redistributing the costs and benefits that result from a HWMF siting. Because there are important differences in how mitigation, compensation, and incentives relate to HWMF impacts and costs, it is useful to carefully define them.

Mitigation is an action that prevents or reduces an impact. It basically represents the first line of defense in dealing with impacts. In terms of HWMFs, it may mean, for example, redesigning a facility to prevent groundwater pollution or noise impacts.

Compensation is generally a tool for dealing with unavoidable, intangible, and unpredictable impacts. It essentially is a means for dealing with impacts that cannot or will not be mitigated. Compensation attempts

to make affected interests as well off after the siting event as they were before. The developer or the State provides benefits equal to the value of a impact or cost incurred.

Incentives, on the other hand, provide benefits above and beyond the costs associated with the HWMF. Cost-benefit balance is not an issue in using incentives to deal with HWMF impacts. Incentives try to make people better off than they were before the HWMF siting. Generally, they provide a HWMF developer or the State goodwill or strategic value in the siting process. Exhibit 1 illustrates typical HWMF impacts and typical mitigation, compensation, and incentives that may be appropriate in the siting of a HWMF.

There is often a blurry line between mitigation, compensation, and incentives. The reader should not assume that a clear distinction can always be made between these techniques. It is almost impossible, for example, to determine the precise amount of compensation to apply in a siting situation. Therefore, the distinction between incentives and compensation is not always possible to make.

1.4 RATIONALE FOR THESE RESPONSES

In general, mitigation, compensation and incentives:

- Provide a more complete accounting of HWMF costs;
- Provide an opportunity for HWMF costs to be balanced by HWMF benefits or developer-provided benefits;
- May help to ensure the siting of environmentally sound HWMFs and, therefore, help to prevent illegal dumping.

Due to the inherent differences between the three techniques, the rationales for each one are considered separately.

Why Mitigate?

First of all, there may be requirements in other Federal, State, or local regulations to mitigate impacts. These requirements may be specifically outlined in local zoning or state environmental impact regulations. Secondly, it may be more efficient or cost-effective to deal with impacts up front rather than paying for them later. For example, aesthetic and noise impacts of a proposed HWMF may pose significant issues -- ones that may eventually concern the community in which the facility is sited. In order to avoid potential complaints that residents may voice after the facility is built, the developer or the State may buy sufficient land as a buffer for the facility before construction of the facility. The developer may also find it considerably more expensive to purchase additional land later to deal with aesthetic and noise impacts. Airports are prime examples in which additional land purchases to deal with noise issues are very expensive. Finally, it may be desirable to mitigate potential or projected impacts for strategic reasons. A community and its residents will generally be more receptive to a HWMF where the developer carefully anticipates impacts and takes actions to prevent or reduce them. By explicitly considering and proposing alternative mitigation measures, developers or the State may establish credibility and trust with a host community.

Why Compensate?

While the developer will generally find it desirable to mitigate HWMF impacts, it may be impossible to mitigate all costs associated with a facility. This difficulty may stem from technical problems, such as the inability of a site location to be changed; planning problems, such as the difficulties associated with predicting the type and magnitude of impacts; and economic reasons -- it may

ply be cheaper to site now and pay later. Additionally, mitigation may never complete for all possible impacts of HWMF siting because some risk will always

1. Compensation is useful in HWMF siting because it provides a mechanism for responding to the long-term impacts and risks associated with these facilities.

Compensation is particularly useful for resolving the problems of economic equity associated with HWMFs. Through compensation, the true costs and benefits a facility can be more accurately figured and evenly distributed, avoiding excessive localized costs. In short, compensation can enable a more efficient and appropriate site selection process.

Why use incentives?

Since incentives represent additional payments in the siting process, they are not easily rationalized by a cost-benefit framework. Incentives are useful in HWMF siting for goodwill and strategic purposes. In using incentives a developer demonstrates to a host community, group, or an individual the willingness to bear additional costs in order to site a facility.

The most important consideration in the use of incentives is their potential to backfire, i.e., to be counterproductive in dealing with public opposition in the siting of HWMFs. Incentives that are unrelated and non-responsive to impact issues that remain unmitigated or uncompensated are especially vulnerable to backfiring. There is considerably much less backfire possibility if the community initially suggests the use of incentives.

1.5 EXAMPLES FROM OTHER FACILITY SITING EXPERIENCE

In considering a potential State role for compensation in the siting of HWMFs, it is useful to briefly consider other facilities that are perceived as objectionable.

The role of the States in compensating the impacts of these facilities provides some perspective on HWMF compensation.

There are a number of other nuisance type facilities that typically stimulate objections in the siting process. Some of the facilities include:

- Municipal wastewater treatment facilities
- Prisons
- Airports
- Energy facilities

While incentives and compensation have been applied or considered in each of these facility siting situations, the State role has varied considerably. In municipal wastewater facilities, for example, States provide an incentive to communities to build the facility through a matching grant to an EPA construction grant under the Clean Water Act. The Federal government provides 75% of the construction cost; States generally provide 15-20%; and the communities the rest. The State portion is typically viewed as an incentive to the community to build sewage treatment facilities. The latter, like a HWMF, is perceived as providing benefits beyond the local community -- thus, the rationale for State subsidy of the facility construction cost. The combined funds -- EPA, State, and local -- are also used for mitigating impacts that are likely to occur from the treatment facility. Thus, in the siting process, grant recipient communities may be required to change the design of a facility, alter operating plans, or even choose a different location.

Prisons and airports offer two facility siting situations in which the State is often the owner and operator of a nuisance facility. This is in contrast to the above example. Airports have a relatively extensive experience in the last 10-15 years with impact mitigation techniques. For example, runway location, buffer zones, and flight patterns have all been used to deal with noise. More recently, airports have also used compensation techniques to offset property value changes. For example, the Logan Airport operation in Boston, MASSPORT, purchased homes of nearby residents to compensate them for noise effects. There does not appear to be much evidence for the use of compensation or incentives in the siting of State prisons. These facilities generally, involve, at a minimum, however, mitigation actions in the form of buffer zones. In addition, in-lieu of tax payments are fairly common with prisons.

All of the above situations involve the State in compensation in a facility that is publicly owned. While these are useful precedents for a State-owned HWMF, most States are initially involved in HWMF siting as a regulator and not as an owner.

For privately-developed HWMFs, energy facility siting experiences offer useful analogies for State HWMF compensation approaches. In States where there has been considerable energy facility development, energy facility siting laws have been developed. These typically require the energy developer to obtain a number of permits in order to construct a facility. States have used their permit granting

authority to require developers/utilities to compensate local communities for socioeconomic impacts associated with the construction of the facility. This requirement may involve grants to the communities or developer-provided services (such as roads and sewers). A good example is the Washington Public Power Supply System's (WPPSS) \$12 million compensation for public facility and public service impacts projected to occur from its nuclear power plant construction activities. The WPPSS negotiated agreements for this amount in the mid-1970's with 44 different taxing districts. The State of Washington's Energy Facility Site Evaluation Council encouraged this compensation and served as a mediator during the negotiations.

Generally, in energy facility siting situations, the States expect or require the developer to deal directly with the local community to mitigate or compensate impacts. Actual State involvement with compensation may be limited to planning grants or planning assistance. Because of the financial resources that an energy developer has, States have not felt compelled to subsidize the mitigation or compensation effort.

In summary, while States have had a role in nuisance facility compensation, there are not extensive analogous situations in which States are directly providing compensation for private facilities. States have been fairly active in compensating impacts when public facilities or projects are involved. Energy facilities provide the most extensive examples of compensation for private or semi-public facilities. And in these cases, States have generally required the developer to directly provide the compensation.

In considering the utility of mitigation, compensation, or incentives, the reader should also consider previous experience with HWMF siting. How do you prevent stalemate from occurring in the siting process? How can you help to ensure

hat costs are better distributed? Certainly mitigation, compensation and incentives have drawbacks -- and these are discussed, but their use may ensure the siting of an HWMF by recognizing HWMF impacts, not by facing-down objections.

6 SCOPE OF THIS HANDBOOK

This handbook provides an examination of the techniques of mitigation, compensation and incentives as responses to HWMF impacts. Section 2 explores initial State considerations in using these responses, particularly State versus private sector provision and basic implementation issues; Section 3 examines mitigation; Section 4 looks at compensation; and Section 5 reviews incentives.

Several appendices supplement the text: Appendix A discusses the State's power to impose impact response requirements on a HWMF developer; Appendix B looks at some interstate issues arising out of state-provided impact response; Appendix C examines the power of a state to provide impact responses; Appendix D presents compensation language from selected state legislation. Appendix E contains two model binding agreements—one between a HWMF developer and a community and one between a HWMF developer and a resident; Appendix F briefly examines the liability issue associated with state-provided impact responses. Appendix G is a present value table used in an example in the text.

SECTION 2

INITIAL CONSIDERATIONS

The application of impact response techniques involves a number of considerations. This section will review some of the key evaluation issues for States including: the potential problems associated with State versus private sector provision; and general implementation issues in providing mitigation, compensation, and incentives.

2.1 STATE VERSUS PRIVATE SECTOR PROVISION

Issues

State involvement in mitigation, compensation, and incentives may open up the State to a number of potential problems. These may occur depending on whether the State directly provides the impact response or requires a response from the HWMF developer. Major issues include:

- Political Precedent -- State involvement in these techniques may set a precedent for a similar State response in a future nuisance facility siting;
- Compromised State Regulatory Role -- Direct State provision of these techniques may be viewed by the public as a compromise of the State's power to also regulate HWMFs;

- Legal Authority -- There are legitimate questions about the legal authority of a State to provide compensation and incentives. There may also be legal opposition by the private sector to requirements imposed on them;
- Private Market Interference -- The HWMF private developer may view any requirements as interference in the community-private sector negotiation process;
- HWMF Costs -- These techniques will redistribute and alter HWMF costs whether the State provides the techniques or requires them of the developer;
- Interstate HWMF Effects -- The impact of the two previous issues may shift the development of HWMFs from one State to another and shift the transport and disposal between States.

The magnitude of each of these issues varies, depending on the technique, ownership (State or private) of the facility, and the institutional arrangement under consideration. While the major issues of State versus private sector provision will be discussed with respect to specific technique in Section 3, 4 and 5, it is useful to introduce these issues initially with respect to different institutional arrangements.

Institutional Arrangements

The basic alternative institutional arrangements for the provision of impact response techniques include:

- Private sector provision, no State requirements
- Private sector provision, State requirements
- State provision
- Combination of State and private sector provision

Private Sector Provision; No State Requirements

This case is a free market situation. Impact responses result from voluntary negotiations between the host community and the HWMF developer. The above issues should be negligible in this situation; however, other concerns warrant consideration. Voluntary negotiations may not occur, or they may be unsuccessful. This may delay the siting process and hinder site acceptance by failing to address public opposition. The failure to provide a contractual arrangement for compensation and incentives may also discredit the legitimacy of the siting process which may increase accusations of developer bribery. Such accusations could also delay facility siting. These considerations have led some States to adopt compensation legislation for HWMF siting.

Private Sector Provision, State Requirements

The precedent set by State legislation requiring private industry to provide impact responses is not of major concern to most of the States. States that have already passed such legislation do not feel that the precedent will create problems in other regulatory areas. The legal authority of States to impose requirements on private industry is also not a major issue. In most cases, conditions that impose compensation requirements on private developers, communities or individuals, may be included in permit applications for the siting of HWMFs through a State authorized agency or board. For more discussion of this subject see Appendix A.

State requirements on the private sector to provide impact response is clearly within the regulatory role of the State. The legal issues generally revolve around the extent of burden a State may impose in the private sector.

The type and form of impact response requirements placed in the private sector by the State have major effects on the siting process. There are two schools of thought on this issue. Some States and private sector developers view State legislation with specific requirements -- such as, type, amount, and recipients of impact response -- as inflexible and constraining. They would prefer to see the developer and host community negotiate unbridled by State requirements. State requirements on compensation and incentives, in particular, are viewed as private market interference. State requirements take away a developer's bargaining chips. Other States and private sector developers view a reasonable amount of State requirements as facilitating the siting process. Legislated requirements, according to this school of thought, provide a structure in which everybody can then negotiate site-specific adjustments. All developers start out on this basis; similarly, all communities start out with a core level of required impact response techniques.

The major effect of State requirements on the private sector to provide impact responses involves costs. A principal concern here is the economic burden placed on the developer, and, in turn, the impact of this burden on the developer's ability to obtain private financing and establish the facility. Where legislation allows the community and developer to negotiate impact responses, as is the case in Massachusetts, this flexibility may relieve some of the economic burden. Additionally, the true costs of HWMF siting are reflected by the extra costs, which, ultimately will be paid by the consumer. The state of Connecticut adopted compensation legislation, however, and found industry very supportive of the requirements despite the additional costs.

State legislation may also have interstate effects. Wastes may be shipped to States where the cost burden on hazardous waste generators, and therefore the cost of disposal, is less. This competitive advantage also resides with facilities established before the legislation since they do not have the extra costs of impact responses. This will obviously not be a problem for States with no facilities prior to legislation. Since the demand for HWMFs is so great, interstate differences in disposal costs may not effect disposal patterns; it may still be cheaper because of transportation costs to use the in-state facilities. Appendix B discusses alternative arrangements for dealing with potential interstate disposal effects.

State provision

State provision of impact response may be favorable for a number of reasons. Exclusive State provision of impact responses may minimize the possibility or perception of illegal payoffs between the private developer and a community. It may also help to resolve differences between communities and the developer and thus help to shorten the siting process. In general, State provision of impact responses provides the State with additional control over the entire impact response process.

States should consider a number of issues before directly providing impact responses. Direct monetary payments from the State for mitigation, compensation, or incentives may set a political precedent for other public and private nuisance facilities. A number of States voiced this concern in a series of interviews with State hazardous waste officials. One way to diminish this possibility is through the use of special language in HWMF impact response legislation that deals with the extraordinary circumstances surrounding HWMF siting.

State provision of impact responses may also undermine the credibility of the State regulatory role. This is an important consideration and one it is also of concern to many State hazardous waste agencies. The public, for example, may perceive the States as unable to adequately regulate a HWMF in which they have provided a substantial investment for impact response. The potential conflict of interest in State roles is minimized, however, if States provide impact responses to communities rather than to developers. There is also precedent for State aid to and regulation of a particular party. For example, States subsidize municipal wastewater treatment plants and the same State agencies regulate them. States also provide a number of subsidies, such as economic development loans to private industry, and also regulate their activities. One precaution that States could implement to minimize conflict of interest charges is to have a State agency, separate from the regulatory agency, to be responsible for impact response activities.

Legal Authority should not be a problem for State provision of impact responses. States possess the power to tax and spend in the public interest, and may determine what goods and services they will provide and how they will be financed. For a more complete discussion of this issue, see appendix C.

State provision of impact responses effects the cost of HWMF siting by reducing part of the economic burden on industry. States, in effect, absorb some of the HWMF costs in order to facilitate the siting process. This State role thus acts as an incentive to private developers in the siting of HWMFs. While this may be questioned as a subsidy to the private sector, State subsidies to private industry already exist in a variety of forms including the development of highways to industrial parks and low-cost industrial development loans.

Despite the incentive intentions of State-provided impact responses, there may be impacts on the private market and interstate disposal costs. If State involvement in HWMF impact response provides the private developer with a competitive advantage over other HWMFs, cheaper waste disposal rates may attract out-of-state wastes. It may also affect disposal patterns at existing facilities in the State. A key issue for the interstate problem involves the distribution of costs. This is directly related to the financing techniques and response method employed. In the case of State provision of compensation through the use of general funds, State residents absorb the compensation costs, and in this way subsidize out-of-state waste disposal. There are two ways to deal with this issue: develop agreements with governments from out-of-state users; or legislate a surcharge on HWMF disposal fees for out-of-state users. See Appendix B.

In general, the cost issues surrounding State provision of impact responses concern basic political policies on economic efficiency and equity: Who should bear the costs of HWMFs? Users, host communities, society at large? The type and provider of impact responses, influences the siting efficiencies and the distribution of HWMF costs. States will have to independently evaluate their needs with respect to the use of these techniques, analyze how they may ease siting difficulties, and distribute the costs and benefits of these facilities. The techniques in the sections below illustrate different cost and equity effects for the States to consider.

Combination of State & Private Sector Provision

Mitigation, compensation, and incentives may be supplied in a number of different combinations by the State and private sector. The types of issues for the State to consider here may be different than just the aggregate of

State provision and private sector provision issues. State provision of compensation, for example, may offset the economic burden imposed by a State requirement for mitigation. Because there are so many different combinations it is impossible to discuss generic issues. The following example shows how one combination of State and private sector provision of impact responses may affect issues previously discussed.

In this example, the State provides incentives to the host community, such as extraordinary road improvements and additional emergency equipment to the community, while requiring the developer to provide compensation to the host community through a tipping fee of 5¢/gallon of disposal waste.

A political precedent is being set by the State provision of incentives. However, the compensation provided by private industry may counter balance the visibility, and relative importance of the precedent being set by the State. The State regulatory role is not compromised by the provision of incentives, although any direct monetary involvement may be criticized. Many of the cost issues previously discussed still apply to this situation depending on how the incentives are financed by the State. Some of the issues may be minimized by the combination of State and private sector provision of impact responses. For example, although the incentives provided by the State may subsidize industry, the private sector provision of compensation to the community will increase the developer's disposal costs to reflect the true costs of HWMF disposal. Thus, the competitive advantage or disadvantage that would be induced by provision of impact responses from just one of these parties may be negated by the combined provision. Clearly, various provider combinations will influence the major issues of State versus private sector provision of impact responses.

2.2 GENERAL IMPLEMENTATION ISSUES IN PROVIDING MITIGATION, COMPENSATION, AND INCENTIVES

The basic implementation issues in providing mitigation, compensation, and incentives include:

- Determining impact issues and local concerns.
- Identifying potential recipients.
- Selecting appropriate techniques.
- Determining amount of response.
- Determining timing of response.
- Selecting finance mechanisms.
- Developing binding agreements between provider and recipients.

These issues characterize any effort to provide impact response whether the response is supplied by the developer or the State. This section briefly introduces these issues so States can consider them before developing impact response legislation.

Determining impact issues and local concerns

The first step in implementing an impact response technique involves identifying the impact issues and local concerns. Four basic impact characteristics will determine the range of impacts associated with a facility:

- Impact type.
- Impact magnitude.
- Impact incidence (who & where)
- Impact timing (when & duration)

This impact discovery and characterization process for each site will undoubtedly uncover a number of environmental and socioeconomic impacts such

as those listed in Section 1. The State may formalize this process through an environmental impact review process.

Obviously, impact identification should carefully consider local concerns. Since impacts are perceived by the community differently than by a developer, States should consider a formalized process for including local concerns.

Impacts occur when the characteristics of a specific HWMF interact with the conditions existing at the site where the HWMF is located. Thus, a HWMF with a capacity of 200,000 gallons/day may stimulate 40 trucks coming and going to the facility each day. Site specific access conditions and land use characteristics will affect the severity of this traffic impact, and the perception of its significance. There may be minimal impacts in a heavily industrialized community with existing good access to the facility. In a suburban location, on the other hand, traffic may be a critical issue.

Most State regulatory agencies are aware, of course, of the difficulty of accurately predicting all of the impacts associated with any facility. This handbook does not presume that this process is easy or that all impacts will emerge in the impact discovery process. At best, some issues may only be red-flagged. In these cases, impact response contingency arrangements are appropriate.

Identifying potential recipients

The impact characteristics will influence this process. Property value issues may be of interest to land owners, for example, in the immediate vicinity of the HWMF or along transport routes. Community water supply

Impacts, on the other hand, affect the entire community. Risk impacts,

in many cases, cannot be parceled out neatly to recipients. Because

potential recipients will vary by impact issue, a mix of impact responses is often desirable. For example, cash payments to the host community will not adequately address impacts in neighboring communities. These communities may require mitigation measures or incentives.

In fact, identification of the parties affected by each impact issue will aid in the choice of response techniques. A formalized process for this identification will be particularly useful in avoiding accusations of unfair and nonresponsive compensation and mitigation. Again, however, this handbook recognizes the complexity of impact incidence. States and developers of HWMFs may simply not be able to define initially all those affected by impacts.

Selecting Appropriate Techniques

Selecting the appropriate impact response technique involves a number of considerations, including:

- Impact Issue/Impact Response Matching
- Legal authority.
- Cost-effectiveness.
- Strategic value.
- Secondary impacts.

Impact Issue/Impact Response Matching

This issue may not be a major concern to some States. Once the HWMF developer has identified both impacts and impact incidence to the maximum extent possible,

the State may not care what type of responses are actually applied. The State may only be concerned that impacts are mitigated in or compensated. The handbook discusses State considerations for specific techniques in Sections 3, 4 and 5. As seen in these sections, some techniques are more appropriate for certain impact issues. In general, mitigation is the first category of impact response to consider. In practice, however, mitigation techniques are not totally suitable for all impact issues. Some impacts are unavoidable and cannot be mitigated; others are difficult to predict. In these cases, some type of compensation is clearly warranted. But developers and States obviously should not feel constrained by any "impact issue/impact response matching" rules. There simply is not a best or clear-cut formula to apply. Incentives, for example, may or may not be directly related to impact issues. Those that are not related to specific HWMF impacts, however, may still have an important influence in siting the HWMF.

Legal Authority

Pre-existing regulations or authority may constrain the implementation feasibility of a particular impact response. An example of this involves alternative trucking routes as a response to traffic impacts. In this case, one of the alternatives may involve rerouting traffic along different highways to avoid residential areas. Existing Federal and local highway regulations, however, may preclude the use of alternative routes. In terms of compensation, State constitutions may forbid the State to commit itself to long term monetary arrangements. Thus, the State may not be able to agree to provide compensation funds to a community on an on-going basis.

Cost-Effectiveness

In most cases, mitigation, compensation and incentives will add costs to the overall HWMF project. As argued in Section 1, these are "legitimate" costs that have often not been reflected in previous HWMF sitings. The magnitude of these costs will, of course, be dependent on the type of impact issue under consideration. In some cases, however, a number of techniques may adequately deal with a specific impact issue. Refer to Exhibit 1 in Section 1. In these cases, cost-effectiveness can be used as a selection criteria. For example, as a response to the aesthetic impacts of a HWMF, mitigation measures might include developing a buffer zone or relocating the facility on the site. Compensation would involve direct cash payments to the affected parties. It may be cheaper to provide the buffer zone as well as administratively easier.

Different techniques and financing methods will also clearly involve different administrative costs. A response involving ongoing payments from the State to a community will require some type of a distribution program. One-time up-front payments, or direct payments from industry to the community will not add this expense to the State. The administrative costs of different techniques should be included in cost comparisons.

Cost should also be determined in present value terms in order to adequately compare one-time costs with techniques that involve on-going costs. See Exhibit 2 for an illustration of this concept.

Strategic Value

The choice of impact response techniques obviously involves strategic considerations. The political acceptability of an impact response will be a

EXHIBIT 2

PRESENT VALUE ANALYSIS

Definition: Present value analysis is a technique for comparing the costs of alternative impact response schemes having different time streams of capital and recurring costs. The present value future cost represents the sum that would provide an equivalent income stream, if held in a which yielded the current rate of interest. In reality, there is no one current rate of rest. The current rate at which one must borrow funds, however, is generally acceptable.

The formula for determining present value if the HWMF impact response period is T years

$$PV = C_0 + C_1 PV_1 + C_2 PV_2 + \dots + C_T PV_T + O_0 + O_2 PV_2 + \dots + O_T PV_T$$

re

C = Capital costs at time n

O = Other costs at time n

$$PV_n = 1/(1 + i)^n, \text{ when } i = \frac{\text{interest rate in \%}}{100}$$

Impact response capital costs may involve new roads or buffer zone purchases; other costs may be tipping fees or other on-going payments.

Example: Rather than use the present value formula, one can consult a present value table as shown in Appendix G and use the present value factor for a specific interest rate and time period. A simplified example is shown below:

Impact Response Alternative 1

Project Start-up:

• New fire truck to host community	\$ 80,000
• Lump sum payment to property abutters	\$ 45,000
• Payment to host community to fix access road	<u>\$300,000</u>
	\$425,000

Continuing:

• Tipping fee to host community	\$ 50,000/year
• Tipping fee to neighboring communities	<u>\$ 10,000/year</u>
	\$ 60,000/year

Impact Response Alternative 2

Project Start-up:

• Lump sum payment to property abutters	\$ 45,000
---	-----------

Continuing:

• Tipping fee to host community	\$100,000/year
• Tipping fee to neighboring communities	<u>\$ 10,000/year</u>
	\$110,000/year

Assumptions: 20 year planning period
Interest Rate: 10%
(Private Sector)

Alternative 1: $PV = \$425,000(.1486)^* + (\$60,000)(20 \text{ years})(.1486)$
 $= \$63,155 + \$178,320$
 $= \$241,475$

Alternative 2: $PV = \$45,000(.1486) + (\$110,000)(20)(.1486)$
 $= \$6,687 + \$326,920$
 $= \$333,607$

*From Appendix G

major factor in HWMF siting. For example, there is substantial mistrust by the public about the technological adequacy of HWMFs. A well-conceived mitigation and compensation strategy may be insufficient to overcome this mistrust. Without third-party monitoring above and beyond what is required, public opposition may remain entrenched. In general, host communities and other sources of public opposition may not place much credibility in a HWMF developer's operation promises, or promises of State enforcement. These mistrust and enforceability issues may well be addressed in many cases via the incentive of third-party monitoring.

Secondary Impacts

An important consideration in selecting an impact response concerns the indirect or secondary impacts that responses induce. Simply put, solution to one problem may lead to another problem. For example, one solution to increased truck traffic to a proposed HWMF is to build one or more transfer stations and ship the waste in fewer and larger vehicles. This alternative essentially involves siting an additional HWMF to facilitate the development of an already proposed HWMF. The solution may require as many complex negotiations and impact issues as the original facility.

Each of these considerations are relevant to the selection of an appropriate impact response. From the State perspective, the diversity of the considerations implies that comprehensive HWMF impact response legislation may be difficult to develop. Massachusetts and Connecticut offer two contrasting examples of States that have recently passed hazardous waste siting legis-

ion that includes a provision mandating developers to provide compensation. The legislation, however, merely requires the activity -- it doesn't spell out precise requirements. Site specific negotiations between the developer and a host community will determine the appropriate techniques according to the Massachusetts approach, though the State may also act as an arbitrator. Connecticut, on the other hand, recently passed legislation specifically spelling out the type and amount of developer compensation to a HWMF host community. Kentucky has also recently passed similar legislation. In both cases, the developer pays a tipping fee to the host community based on the amount of waste handled at the HWMF. See Appendix D for these alternative legislative approaches. The Connecticut and Kentucky legislators do not pretend to offer comprehensive impact response approaches. Rather, they require a core starting point from which additional site-specific act responses could be negotiated by the developer and affected communities. The Massachusetts approach assumed that the whole package of impact response should be negotiated.

Finally, the consideration of each of these factors in selecting appropriate impact response techniques is obviously not a clear-cut exercise. A hypothetical example is shown in Exhibit 3 to illustrate the difficulty in selecting among impact responses. In this particular example, the choice is among different mitigation techniques to deal with truck traffic impacts. Implementation feasibility encompasses, in this example, legal authority and political acceptability issues. The example illustrates the tradeoffs that have to occur in selecting impact responses. The most effective measure--the

EXHIBIT 3

Mitigation Alternatives

For Dealing with HWMF Truck Traffic Impacts (Hypothetical Example)

MITIGATION ALTERNATIVES	COST*	EFFECTIVENESS	IMPLEMENTATION FEASIBILITY	SECONDARY IMPACTS
A Reduce Size of HWMF	\$3,600,000 (lost profits)	Will cut truck traffic by 50% to HWMF	No special problems except for financial feasibility of a smaller facility	Will require another facility in the metropolitan area to meet hazardous waste disposal needs; higher disposal costs to industry
B. Reroute traffic along different highway(s)	\$ 750,000 (cost of repairing alternative route)	Will eliminate traffic in residential area; shift traffic to rural route; difficult to enforce	May shift political opposition to another area; otherwise no special problems	Fewer people affected by rural route, but opposition may be encountered
C. Construct transfer station in another area; use larger haul trucks	\$4,200,000	Will cut truck traffic by 75% to HWMF	Will be politically difficult unless done in local industrial area	Will require the siting of the transfer station with all of its attendant impacts; increased risk due to extra handling; roadways may deteriorate more quickly
D. Limiting HWMF operating hours to strictly 9:00 AM to 5:00 PM	\$ 500,000 (lost profits)	Will eliminate truck traffic during sensitive hours	No special problems	Will concentrate truck traffic in peak traffic hours, thereby increasing traffic accident risk

*These are costs (capital, O & M, lost profits) to the developer or to the State and are expressed in present worth terms on the basis of a 20 year design life for the HWMF.

transfer station alternative--is also the most explosive and is complicated by the political problems of siting another facility. The least expensive option--limitations on operating hours--does not totally prevent the problem.

Determining Amount of Response

The amount of mitigation, compensation or incentives to be used is potentially the most negotiable aspect of impact response implementation. As mentioned above, the States that have adopted compensation legislation for compensation in HWMF siting have chosen two basic approaches with respect to the amount of compensation: an open model and a closed model. Massachusetts, believing that the main purpose of legislation is to legitimize the compensation process, has an open model. The Massachusetts legislation explicitly allows any conceivable type or amount of compensation to meet any conceivable adverse impact. Communities and operators are free to negotiate any agreement providing that it does not reduce environmental controls below the level required by the State. Kentucky and Connecticut use a closed model. In these States a specific amount based on the waste volume or revenues of the HWMF developer is paid to the host community. Even with closed model, legislated amounts, however, can remain somewhat negotiable. For example, in Kentucky the local governments are left with the decision of whether or not to tax the HWMF's revenue.

These two methods have advantages and disadvantages. When the amount of compensation is fixed, the siting process is likely to proceed more quickly. Additionally, both sides know what to expect. The developer knows the cost and can factor it into his calculations while the community can determine if the required compensation is sufficient. The disadvantage of the closed approach rests with its inflexibility. The payment may be too low or high for a given situation, and it may not allow for other types of responses. Also if the required payment is too high, HWMFs may not be able to afford to provide other more effective or

desired compensation, or mitigation measures. The major problem associated with the open model is that it may lengthen the negotiation process.

Termine Timing of Response

The implementation feasibility of a particular response is directly related to the timing of an impact. While some impacts, such as construction noise, occur for a limited length of time, others, including those related to facility operation, occur continually over time. The acceptability of a response is related to how adequately it deals with the timing of a potential impact. A response offered on an ongoing basis, such as direct monetary compensation based on HWMF waste tonnage, can deal with impacts as they occur. It may not, by itself, however, successfully provide for post-closure impacts. A one-time payment made up-front, or a design-change mitigation technique does not address ongoing, operational impacts. Obviously, some responses will be better suited for certain impacts than others. Incentives may be more appropriate for impacts relating to the community image, while compensation, in the form of land value guarantees to property owners, may address property value impacts more completely.

Selecting Financing Mechanisms

One of the most difficult issues facing States that provide HWMF impact responses, whether it be monetary payments, in-kind replacements, or contingency arrangements, is the finance issue. There are three general approaches to financing State-provided impact responses:

- 1) State general funds,
- 2) Fees or taxes on private HWMF operators, disposers, or generators.
- 3) Some combination of 1 & 2.

A number of specific State statutory constraints will affect the finance decision, such as limits on bonding. In addition to these considerations, however, States should also consider the equity and hazardous waste disposal

market impacts of their financing decision, Reliance solely on State general funds potentially burdens all of the State residents with HWMF impact costs, This financing method may also result in a State subsidy to new HWMFs allowing them to gain a competitive advantage in the HWMF market over existing in-state and out-of-state HWMFs. As alluded to earlier, this may alter transportation and disposal patterns of hazardous waste. The use of HWMF disposal fees to finance State-provided impact response will distribute the disposal costs more equitably but may weaken the competitive advantage of new HWMFs with respect to existing HWMFs.

A summary of State finance options is presented in Exhibit 4 .

Binding Agreements

When the State directly provides impact responses or if it requires the private sector to do so, generally an agreement will be necessary to ensure recipients that the provider will supply the promised response. In the first case the State may have to enter into agreement itself with recipients; in the latter case the State may want to review impact response agreements between a HWMF developer and a recipient. Appendix E presents two model agreements: one between a developer and a local government; and one between a developer and a private citizen. Appendix E also discusses the issues associated with bringing agreements and for impact response techniques. In general, these agreements face the following obstacles:

Local governments cannot contractually bind the community to refrain from exercising its police powers in the future. Thus, an agreement between a HWMF developer and a community will probably not have quid pro quo arrangements. Rather, the agreement is more of a mechanism for developers to demonstrate their commitment.

METHOD	DEFINITION	USES/EXAMPLES	ISSUES
1. General Obligation Bonds	These bonds are backed by the "full faith and credit" of the issuer and are generally financed by taxes and/or revenues from user charges.	Suitable for compensation that involves one-time capital expenditures.	These bonds typically carry lower interest rates than revenue bonds. Amount of indebtedness capable of being incurred might affect the use of this mechanism.
2. Revenue Bonds	In this type of bond, payments are derived strictly from charges for services provided.	These are also generally used for capital costs, particularly in cases where charges can be easily matched with compensation provided. They are also attractive where statutory limitations prohibit additional debt via general obligation bonds.	These bonds typically carry higher interest charges than general obligation bonds.
3. Grants/Loans	These are cost sharing sources outside the jurisdiction. They are generally used to finance a portion of the capital costs of a project.	The State may be able to obtain grants/loans from the Economic Development Administration or regional commissions. In addition, Federal categorical grants, such as highway money, could be used to finance in-kind compensation.	By subsidizing a portion of the capital costs, grants and loans will, of course, reduce the State's share of compensation costs. This may be critical to political acceptability of a compensation measure. Cost-sharing programs, however, may impose conditions that may be unacceptable to the State.
4. General Operating Revenues	These funds may come from a variety of State sources, such as miscellaneous fees, fines, and taxes.	These are suited to recurring compensation costs or capital costs. They can also be set aside money for sinking funds that can be used for specific compensation projects.	The use of general operating revenues distributes compensation costs to both users and non-users. Sinking funds, much like a private savings account, use past revenues to fund current projects.
5. User Charges	User charges are revenues derived from a user of a project or service and are based on actual or surrogate measurements.	The State may collect these from disposers or operators of an HWMF to finance capital and recurring compensation costs.	User fees and charges are designed to maximize the "earned rewards" principle by charging users for services received. A consideration in setting user fees is the impact that it might have on the user. If States try to totally recover compensation costs through user fees, they may stimulate non-use of an environmentally suitable HWMF and use of illegal dumping instead.

Agreements with local governments are, of course, not binding on the residents of communities. Thus, for some impact issues the developer will have to develop agreements with individual residents or groups.

SECTION 3

MITIGATION TECHNIQUES

3.1 INTRODUCTION

Mitigation generally involves an action that attempts to prevent or reduce impacts from occurring. The key aspect of mitigation is its preventative nature. As discussed in Section 1, there are several reasons why mitigation is appropriate in the HWMF siting processes:

- It may be legally required by federal, state, or local regulations;
- It may be cost-effective to avoid impacts rather than paying for them later;
- It may be strategically useful in demonstrating commitment and credibility in the siting process.

Because mitigation measures are very site-specific in nature, the handbook will not attempt to cover every mitigation technique that may be appropriate in HWMF siting. Rather, the subsections below discuss generic types of mitigation actions that are appropriate in the HWMF siting. HWMF mitigation actions include the following generic types.

- Facility Design Changes
- Facility Operation Changes
- Facility Location Changes

FACILITY DESIGN CHANGES

Description

This technique includes physical changes and adjustments to the HWMF design construction. Changes may include both deletions, such as a change in the size of the facility; modifications, such as the change in height of an incinerator stack; or additions, such as the purchase of additional land to serve as a buffer zone between the facility and neighboring properties. In addition to these variations, facility changes encompass, for the purpose of our definition, changes in the vehicle design used to haul hazardous waste to a HWMF. For example, the addition of a spill containment system on a waste haul vehicle constitutes a design change.

Examples

Mitigation techniques involving design changes are probably the most common mitigation measures appropriate to HWMFs. The concern in this handbook is with mitigation measures that are generally not part of typical permit requirements. The types of design changes beyond those required by the permitting authority include, for example, the following:

- Additional or thicker liners for landfill facilities;
- The addition of separate trenches in landfill facilities for segregating wastes;
- Increasing stack heights to disperse incinerator particulates;
- The incorporation of large buffer zones or earth berms in the HWMF to minimize aesthetic and noise impacts;
- Changes in the HWMF access road;
- Emergency spill containment systems provided on-site and on haul trucks.

Suitability

Mitigation techniques involving design changes may be appropriate for a number of impact issues, including the following:

- Traffic impacts
- Noise impacts
- Air pollution
- Ground and surface water pollution
- Aesthetic impacts

In many cases, design changes can prevent or significantly reduce the above impacts. In general, these impacts have one thing in common--they are fairly tangible in nature. This, in large part, explains the effectiveness of design changes. On the other hand, the following impacts are more intangible in character:

- Risk
- Community stigma impacts
- Property value changes

These impact issues are highly interrelated. Because these issues are more intangible, they are more difficult to predict, and therefore more difficult to mitigate. For example, the mere presence of a HWMP in an area will likely affect abutting property values. Design changes may reduce or eliminate the impacts that in part stimulate property value impacts--noise, traffic, air pollution. But these mitigation measures are unlikely to fully eliminate the risk issue. The fear associated with risk is likely to be an on-going factor influencing property values.

General Issues

Beyond the fact that mitigation measures in the form of design changes may be required as part of the permitting process, other design changes are useful for the following reasons:

- They give the developer or the State credibility in negotiating with opposition groups.

- While the State has broad discretionary powers over the private developer, the economic burden placed by the State in the form of excessive design change requirements bears careful consideration. Judgements exercised by the State on these impacts responses require a balance between costs and impact management. It may be just as adequate to deal with some impacts via compensation techniques and at the same time maintain the financial feasibility of the site.
- While State sharing of this type of mitigation would potentially relieve the economic burden on the private sector, there are other more appropriate State incentives that could be used to deal with the issues that this mitigation technique is intended to resolve. These include site banks and facility development loans to the private sector.

3.3 FACILITY OPERATION CHANGES

Description

This technique includes a number of actions that prevent or reduce impacts. These actions encompass changes in the on-site operation of the HWMF, such as operating hour changes, waste handling procedures; changes in off-site operation: such as waste hauling routes; and changes in the types of wastes allowed in the facility.

Examples

The most extensive examples in this mitigation category encompass precautionary techniques. These techniques generally try to reduce the risk of an accident from occurring; to enhance the capability of the operator or the host community to respond to an emergency situation; or to provide an early warning system. Examples of these techniques include:

- Monitoring, including groundwater and surface water;
- Agreement to independent site and facility inspections; independent monitoring; or independent environmental audits;
- Purchase and use of accident or clean-up equipment, including fire trucks;
- Emergency response procedures;
- Security plans and procedures;
- Employee training in security and emergency response.

See also Exhibit 5.

Exhibit 5

MONITORING: CASE EXAMPLES

- *The City of Indianapolis attempted in 1978 to develop a waste-water sludge plan that involved disposing its sludge from existing lagoons into nearby farms. In order to successfully implement its plan, the city had to agree to subsidize the Indiana State Board of Health to monitor potential ground-water contamination and to inspect private wells nearby.*
- *The IT Corporation of Los Angeles, California directly provides groundwater monitoring at a HWMF in Benecia, California. These monitoring wells were negotiated with the State and cost the IT Corporation approximately \$150,000/year.*
- *An additional variation on monitoring arrangements was agreed to by the Boston Edison (BE) Company and the Massachusetts Wildlife Federation (MWF) involving radiological monitoring at the Pilgrim nuclear power plant in Plymouth, Massachusetts. When attempting to build an additional facility at the existing power plant, BE was confronted by the MWF about the monitoring issue. A settlement agreement was negotiated in 1976 which included, in addition to BE's monitoring program, an oversight advisory committee to administer the monitoring program. This committee was comprised of members from BE, MWF, and State agencies.*

Monitoring, in particular, is widely used as an attempt to provide an warning system for potential problems as seen in the examples in Exhibit 5. These examples include non-HWMF experiences.

An interesting example of an operations-related technique to deal with public opposition for a private HWMF facility is the use of the State to actually operate the facility. The rationale behind this approach is very simple: the State is viewed as more likely to protect the public interest in operating a HWMF. While most States view the ownership and operation of HWMFs as private sector responsibility, States are not totally foreclosing the option of operating privately-owned and publicly-owned HWMFs. The Maryland Environmental Service (MES), for example, has legislative authority to operate a number of environmental facilities. These include municipal wastewater treatment facilities, municipal drinking water facilities, solid waste landfills, and hazardous waste facilities. In an attempt to site a hazardous waste landfill in Rossville, MD to dispose chromium waste from its Baltimore plant, Allied Chemical proposed the use of the MES to operate its facility. The HWMF site was eventually rejected by the county for a number of reasons unrelated to MES' proposed operation of the facility. The only other State that has shown much interest in operating facilities is New York. There appears to be widespread support for State operation (and ownership) of private HWMFs in New York because of the adverse publicity associated with privately-operated HWMFs in New York. The only public body that is moving quickly towards public operation of HWMFs is the Gulf Coast Authority in Houston, Texas. This is a special district arrangement in which waste generators are cooperating with this special authority to jointly finance and own a HWMF. GCA will operate the facility after it's built.

Other common facility operation examples that potentially mitigate impact issues include:

- Operating hour limitations
- Changes in the wastes allowed in the HWMF
- Waste haul route changes.

Suitability

Operation techniques are applicable to a wide variety of impact issues as seen by the examples. The precautionary techniques are particularly suitable for the following issues:

- Ground and surface water pollution
- Odors
- Risks

State-provided operations may potentially mitigate all of the impact issues. Operating hour changes are suitable for noise impact, traffic impacts, and, to a less extent, property value effects. Changes in allowable wastes directly deal with the risk issue; while waste haul route changes are best suited for the noise, traffic, highway maintenance, and risk issues.

General Issues

The issues associated with mitigation design changes, cited in Section 3.2, also generally apply to the use of operational techniques. In many cases, however, operation changes, such as truck rerouting or operating hour changes, will allow for cheaper mitigation techniques than design changes.

One issue associated with operation-oriented mitigation is the question of enforceability. Host communities and other sources of public opposition may not place much credibility in an HWMF developer's operation promises. This distrust and enforceability issue may preclude the ability to use some of these mitigation techniques as alternatives to design or location changes.

Efforts by the developer to involve impartial, technically-competent, third parties in the monitoring and oversight arrangements may be crucial in overcoming this distrust. This type of independent monitoring is likely to be one of the most important impact responses in HWMF siting. Ironically, its popularity stems from a distrust of both private sector operation practices and State regulation of these practices. This contrasts with public support in some States, notably New York, for State-operated HWMFs. The Boston Edison/Massachusetts Wildlife Federation example in Exhibit 5 is a good example of third party monitoring. The implementation requirements for third party monitoring, besides financing and a binding agreement, include: determining monitoring issues (e.g., groundwater, staff training, emergency containment systems); choosing the third party (private sector, environmental group, host community, combination of these); and determining the frequency of monitoring.

State Provision Versus Private Developer Requirements

When the State is both the owner and operator of a HWMF or, as in the case of the Maryland Environmental Service (MES), is potentially the operator of a private facility, operational changes are clearly legitimate mitigation measures for the State to provide. The more problematic case concerns the extent to which the State should be involved in operational aspects of privately operated HWMFs. As in the case of the previous mitigation technique, the role of the State as a regulator is a key issue.

In serving its regulatory function, the State will require that certain operating precautions be taken. Some of these, such as groundwater monitoring, will be mandated by RCRA requirements. Even if the State imposes strict emergency response and monitoring requirements on a private developer, the State, as part of its regulatory function, will also serve in an oversight or monitoring function. To offset the costs associated with this function, the State

may require the developer to pay inspection and monitoring fees. Several States impose a multi-purpose fee on HWMFs based on annual tonnage of waste handled at is used to support the State monitoring, inspection, and permitting program. As a means of stimulating further HWMF operating credibility, the State may also require the HWMF operator to fund third party participation in the monitoring function.

As in the previous mitigation technique, State operational requirements on private developers have to be exercised with some caution. Operational changes can be a very effective and inexpensive way of mitigating impacts. But some requirements, such as increased security and monitoring, are not trivial. And unlike design changes, the costs of which may be paid once by the developer, operational requirements may pose recurring costs.

3.4 FACILITY LOCATION CHANGES

Description

This mitigation technique is the most drastic since it deals with site specific impact issues by attempting to use an alternative HWMF site. A variation of this technique, when a large site is involved, is to alter the location of the facility within the original site.

Examples

Until recently, careful consideration of alternative sites has not characterized the HWMF siting process. The recent passage of hazardous waste siting legislation in many States has altered this--increasingly the siting process is starting with several sites. The Delaware River Basin Commission, New York State, and the New England Regional Commission have all actively supported efforts to identify areas suitable for HWMF development.

suitability

In the face of considerable public opposition, this technique may be the only feasible means for siting a new HWMF. It may be extremely difficult, however, to shift to another site for financial and environmental reasons. In particular, if the developer or the State has not located other environmentally suitable sites, the process of determining these may take several months. Or, there simply may not be other sites as environmentally suitable. Environmental suitability will generally be the dominant criteria when the facility type involves some type of land disposal, such as secure landfills or deep well injection.

General Issues

This technique is a last resort type of approach since it basically involves starting the siting negotiation process over again. In short, the shift to another location will merely raise a whole new set of impact issues. Unless the developer or the State has developed suitable alternative sites, as mentioned above, this mitigation technique will also be very difficult to implement.

Facility location changes within a large site are obviously easier for an HWMF developer to accommodate. Any location changes within a site, however, will undoubtedly involve tradeoffs among impact issues. For example, in order to respond to a larger buffer zone request, soil suitability may be compromised. Alternatively, the facility size may have to be reduced in addition to changing its location within a site.

State Provision Versus Private Developer Requirements

Some States require that private developers present alternative sites to the State HWMF siting council. This helps to overcome the delay associated with the siting process, though it certainly may not preclude public opposition

from being generated at a new proposed site. While they should be considered more in terms of incentives to the developer rather than to a community, such state activities as site banks are clearly methods to implement this mitigation technique.

SECTION 4

COMPENSATION TECHNIQUES

4.1 INTRODUCTION

Mitigation techniques may address a number of HWMF impacts. It's highly unlikely, however, that all impacts will be (or in some cases should be) addressed by mitigation techniques only. As seen in the discussion in Section 3, there are practical and cost considerations that make mitigation techniques difficult to apply. This difficulty may be the result of technical problems, such as the inability of a site location to be changed; planning problems, such as the difficulty associated with predicting the type and magnitude of impacts; economic reasons--it may simply be cheaper to site now and pay later; and uncertainty, since some risk will always remain--mitigation is rarely "complete" for all impact issues.

Generally, there will be three major types of impacts that may emerge from mitigation attempts that are potentially compensable impacts:

- Unavoidable impacts
- Intangible impacts
- Uncertainty impacts

Unavoidable impacts may include, for example, increased traffic in the vicinity of the HWMF or the destruction of valued open space. Intangible impacts refer to impacts that are difficult to measure, such as quality of life or community stigma effects resulting from an HWMF. Uncertainty impacts involve

use impact issues where it is impossible to reliably predict whether an impact will occur. Rather than automatically mitigate these impacts (which would be impossible to do anyway) two options are available: contingency-related operation actions, such as monitoring and the development of emergency response techniques discussed in Section 3.3; or contingency funds to compensate for impacts when they do occur.

There are several potential types of compensation techniques applicable to HWMF siting issues.

- Monetary payments
- In-kind replacement of affected resources/services
- Contingency funds

Exhibit 6 illustrates example techniques for each of these major types. The sections below describe the techniques and the issues associated with their use.

4.2 MONETARY PAYMENTS

Description

This technique involves a cash payment to a potentially affected individual, group, or community. Beyond this basic definition, there are important dimensions that differentiate the techniques: the method of the payment; the timing of the payment; the recipient of the payment; and, of course, the provider. Briefly, these dimensions define monetary payments as follows:

- Methods of Payment

This aspect refers to the form and basis for monetary payments. Payments may be direct as in the case of a lump sum cash payment for impacts negotiated by a provider and recipient. On the other

EXAMPLE COMPENSATION TECHNIQUES

TECHNIQUE	APPROPRIATE FOR PRIVATE DEVELOPER USE	APPROPRIATE FOR STATE USE
MONETARY PAYMENTS TO COMMUNITIES:		
o property tax payments	X	
o payments in lieu of taxes	X	
o gross receipt taxes on facility revenues	X	
o tipping fees	X	
o tied impact payments	X	X
o special on-time lump sum payments	X	X
o adjustments to state-local aid formulas		X
DIRECT MONETARY PAYMENTS: TO AFFECTED INDIVIDUALS/GROUPS		
o direct cash payments	X	X
o purchase of property at fair market value	X	X
IN-KIND REPLACEMENT/RESTORATION ACTIONS		
<u>Resources</u>		
o replacement or restoration of property, vegetation, wetlands, etc.	X	X
<u>Services</u>		
o repaving access roads to HWMF	X	X
o provision of fire truck for emergencies	X	X
o replacement of municipal well	X	X
o training of local police and fire departments	X	X
CONTINGENCY FUNDS		
o surety bond	X	
o liability insurance	X	
o emergency response fund		X
o land value guarantees	X	
o tax base loss payments		X

hand, they may be based on some surrogate measure of impact effects. Tipping fees based on hazardous waste amounts and gross receipt taxes both illustrate this type of monetary payment. Payments, particularly those from the States to a recipient, may also be attached to other monetary transfer mechanisms. States, for example, may factor in payments for HWMF impacts in a community into traditional State-provided local aid mechanisms, such as road improvement funds. These types of payments are commonly referred to as "earmarked" payments.

- Timing of Payment

This aspect addresses the "when" dimension of monetary payments. In terms of monetary payments, the key issue is often between one-time and continuous payments. One-time payments may occur upfront in anticipation of impact costs; or they may occur after the HWMF has been operating for a while and its impact costs are clearer. Payments based on waste received at a HWMF are examples of continuous payments.

Because of the uncertainty of potential HWMF impact, communities may want monetary payment schemes reviewed after a period of time. A community may want a conversion provision included in the basic agreement with the developer requiring a periodic review to renegotiate the terms and conditions of the monetary payment scheme. An example is contained in the model binding agreement in Appendix E.

- Recipient/Provider

There are several combinations of providers and recipients involving the State and the private developer as potential providers, and communities, individuals, and groups as recipients. The monetary payment transfer mechanism will vary depending on the provider and recipient. Exhibit 7 illustrates the appropriateness of particular mechanisms for different combinations of provider and recipient.

Examples

There are few actual examples to date of monetary compensation to either communities or individuals by States or by developers in the siting of HWMFs. In addition, some of the techniques listed in Exhibit 6 may not be completely familiar to the reader. More detailed descriptions for some of these terms follow:

EXHIBIT 7

**MONETARY PAYMENT TECHNIQUES APPROPRIATE FOR
DIFFERENT PROVIDERS AND RECIPIENTS INVOLVING PRIVATE HWMFs**

<div> <div>RECIPIENT</div> <div>PROVIDER</div> </div>	COMMUNITIES		INDIVIDUALS	GROUPS
	HOST	ABUTTING		
STATE	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments • State-local aid adjustments 	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments • State-local aid adjustments 	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments 	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments
PRIVATE DEVELOPER	<ul style="list-style-type: none"> • Property tax payments • Payments in lieu of taxes • Facility taxes • Tipping fees • Tied impact payments • Lump sum payments 	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments • Tipping fees 	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments 	<ul style="list-style-type: none"> • Tied impact payments • Lump sum payments

- Property Tax Payments: In terms of compensation, this technique means paying taxes above that normally required for property of comparable value; or accelerating tax payments.
- Tipping Fees: These are fees that are levied on the facility based on each unit of waste (truckload, pound, cubic yard, gallon) accepted at the facility. They provide an on-going source of compensation.
- Tied Impact Payments: These compensation payments are tied to certain impact issues. States may "earmark" funds to communities so that they may only be used for certain activities. Private developers can also earmark funds to communities through their agreements with communities.
- Adjustments to State-local Aid Formulas: States have a variety of specific categorized assistance programs to funnel aid to communities. These can be adjusted and used as a transfer mechanism for monetary payments. In addition to these specific programs, many States also provide general revenues to localities based on population, local tax base assessments, etc.
- Purchase of Property at Fair Market Value: This is a pre-project payment to a property owner for the pre-project fair market value of his property. This is a method for compensating property owners who fear property value impacts and wish to sell to avoid losses. This method contrasts with the land value guarantee payments listed in Exhibit 6 and discussed below.

While there are few examples of the above techniques to date, two States have passed legislation authorizing tipping fees as compensation to host communities. Kentucky and Connecticut require the developer to pay the host community an amount based on the waste volume or revenues of the developer. For example, the Kentucky legislation requires that HWMF developers pay 2% of their gross receipts to the host county's General Fund. Connecticut's formula is as follows:

- \$.05/gallon of hazardous waste received on a quarterly basis;
- Payment in accordance with the following table, whichever is greater:

<u>Quarterly Gross Receipts</u>		<u>Payment as % of Gross Receipts</u>
<u>Over</u>	<u>Not Exceeding</u>	
0	\$1,250,000	10%
\$1,250,000	\$2,500,000	5%
\$2,500,000		2½%

Compensation in the form of monetary payments to communities to offset the costs of specific impacts is extensively used in the development of energy facilities. These compensable impacts are primarily related to socioeconomic impacts. A good example is the Washington Public Power Supply System's (WPPSS) \$12 million compensation for public facility and public service impacts projected to occur from its nuclear power plant construction activities. The WPPSS negotiated agreements for this amount in the mid 1970s with 44 different taxing districts. The State of Washington's Energy Facility Site Evaluation Council served as a mediator during the negotiations.

Suitability

Monetary payments are generally best suited to measurable impacts in which costs are definable. For example, if a community will need two additional local health agents to monitor the HWMF, these costs are easily calculated and can be compensated. HWMF impacts on community image and risk are not as easily costed and less suitable for specific monetary payments. The Connecticut and Kentucky waste-based tipping fees, however, illustrate the suitability of monetary payments for dealing with these intangible impact issues. Essentially these approaches recognize the great difficulty in defining impacts and costs. Thus, they simply imply that impacts are related to the amount of waste being handled at a HWMF and use a waste-based formula. The host community then deals with the issue of distributing these revenues to compensate tangible and intangible impacts.

On-going payments, such as tipping fees, will also obviously produce less revenue for a community in landfill situations (which have a limited lifespan) than incinerators, processing, or transfer facilities. However, if one assumes that risk is related to years of operation, then continuing payments do not "overcompensate" as such.

General Issues

There are a number of general issues associated with the use of monetary payments that States should consider whether they provide them directly or require the private sector to use them:

- Monetary payments to an affected individual or community provide the recipient with a great deal of flexibility. They allow the recipient to decide how to deal with the costs suffered from the HWMF. In this sense they are easier to administer than other forms of compensation.
- While giving the recipient flexibility, monetary payments are also more susceptible to accusations of buying off the recipient. This is particularly possible if there is not a clear connection between the impact cost, the payment, and the disbursement of the payment to offset the impact cost.

In addition to these issues, there are important considerations in using different types of monetary payments:

- One-time Versus Continuing Costs: Certain payments, such as tied impact payments and lump sum payments may be one-time in nature, while tipping fees and property tax payments represent recurring costs. In looking at the economic burden placed on a private sector developer, States should examine the present value of the total impact response packages being required of a developer. Similarly, if the State is providing a package of impact responses, present value analysis as illustrated in Section 2 should be done. This will allow the economic burden of packages to be compared between each other and between providers.
- Impact Responsiveness: The tipping fee and other recurring payment schemes are more responsive to unpredicted impacts that may occur after a HWMF is sited than the one-time up-front monetary payments.
- Equity: Monetary payments directly provided to a community may not filter down to residents affected most by HWMF impacts. In that sense, tied impact payments are likely to be more equitable. One-time, up-front payments tend to compensate existing residents rather than migrants. Recurring payment schemes, particularly ones that are adjustable, are more equitable for existing residents and migrants to a community.
- Administrative Burden: Tipping fees and facility taxes are administratively the easiest to negotiate, calculate, and collect of all the payment schemes. The other schemes are

likely to be more responsive to actual impact costs, but require often difficult calculations and distribution schemes.

The above comments clearly indicate the tradeoffs between the difficult monetary approaches. In order to deal with these issues, a combination or a mix of monetary payments is a useful approach for States to consider in developing compensation schemes. See Exhibit 8 , for example.

State Provision Versus Private Developer Requirements

The above considerations are useful in selecting the form and type of monetary compensation. One of the first and most important issues that a state will want to address, however, is the provider question. Some general considerations are provided below:

Should the State Be Involved in Directly
Providing Monetary Payments?

The following issues are relevant to this question:

- In private HWMF situations, exclusive State provision of monetary payments may minimize the possibility or perception of illegal payoffs between the private developer and a community. If the State supplements developer-provided compensation with monetary payments, it will probably help to legitimize the concept of compensation.
- Exclusive State provision of monetary payments may also be viewed either as:
 - An effective incentive to both the developer and the community to aid in the siting of a HWMF;
 - An unnecessary or undesirable subsidy of the private sector;
 - Interfering with the competitiveness among HWMFs.

Obviously, these contrasting viewpoints will have to be resolved on a State-by-State basis.

BY THE SITING A PRIVATE HWMP
(Hypothetical Example)

RECIPIENT/ISSUE	DEVELOPER PROVIDED	STATE PROVIDED
<u>TO HOST COMMUNITY</u>		
o quality of life impacts	tipping fee of 5¢/gallon of disposal waste--renegotiable every 2 years	
o facility monitoring	annual tied impact payment based on actual costs incurred	
o access road maintenance		annual adjustment on State-local highway aid formula
<u>TO NEIGHBORING COMMUNITY</u>		
o quality of life impacts		annual lump sum payment
<u>TO RESIDENTS ABUTTING FACILITY</u>		
o property value impacts		
o quality of life		one-time lump sum payment of \$5,000/property owner

- Supplementing the above, any State provision of compensation will help to relieve some of the economic burden on the private developer. This may be critical in the successful siting of a facility.
- Any state provision of monetary payments may help to resolve differences between communities and the developer and thus help to shorten the siting process.
- In those States with the ability to override local zoning in HWMF siting, state provision of monetary payments may be a political necessity to assuage community opposition and to minimize community attempts to challenge the constitutionality of the override provisions.
- Conversely, State compensation payments may be the only way in those States with strong home rule laws that States can get HWMFs sited.

Most of the above comments justify State provision of monetary payments.

There are, however, serious issues surrounding State monetary payments and these include:

- Do States have the legal authority to provide monetary compensation in situations where the facility is privately owned? We do not believe that this is a problem at all for States. See Appendix C.
- State monetary payments may set a political precedent for State compensation payments for other public and private facilities. This concern has been voiced by a number of States in a series of interviews with State hazardous waste officials. One way to avoid this possibility is through the use of special language in compensation legislation that deals with the extraordinary circumstances surrounding HWMF siting.
- State monetary payments raises the question of state liability for problems that occur later with the facility. This appears to be a moot issue with respect to private HWMFs. See Appendix F.
- State compensation monetary payments may undermine the credibility of the State regulating role in the siting and operational review of HWMFs. This is a very compelling argument and one that is of concern to many State hazardous waste agencies. The fact that States would be providing compensation to the communities rather than to the developers minimizes, however, potential conflict of interest in State

roles. There is also precedent for State aid to and regulation of a particular party. For example, States subsidize municipal wastewater treatment plants and the same State agencies regulate them. States also provide a number of subsidies, such as economic development loans to private industry, and also regulate their activities. One precaution that States could implement to minimize conflict of interest charges is to have a State agency separate from the regulating agency be responsible for the compensation activities.

- State monetary payments, as well as those required of private developers, may tend to promote the siting of HWMFs in poorer communities. This in fact may occur but whether it represents a social inequity that is of concern to the State is for a particular State to decide.
- Many States are constitutionally prohibited in making long-term monetary or special privilege commitments. Thus, annual payments would have to be legislatively enacted each year.
- State provision of monetary payment may affect the distribution of hazardous waste disposal costs. As discussed below, the method used by the State to finance compensation will affect the distribution of costs. One of the concerns here is that State compensation funded out of general funds will act as a subsidy to out-of-state hazardous waste generators who dispose in the HWMF associated with the compensation. See Appendix B.

<p>Should the State Require Private HWMF Developers to Provide Monetary Payments</p>
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As mentioned, both Connecticut and Kentucky have recently passed legislation requiring private HWMF developers to provide compensation to communities on a formularized basis. Massachusetts has also passed legislation requiring developer provided compensation, but has left the amount to be negotiated between the developer and the community. There are several concerns with this issue that States should consider before developing developer provided requirements. First, on the positive side:

- State requirements for developer monetary payments will tend to legitimize the compensation concept. Specific state requirements in the amount of the payments, such as those mandated in Connecticut and Kentucky, would tend to mute the bribery and illegal payoff issues.

- State requirements are also likely to standardize the negotiation process and therefore provide some "ground rules" to help speed up the siting process.

Several States and some of the private HWMF developers are concerned about State requirements. The principal issues of concern are the following:

- Specific monetary payment requirements may prove to be an economic burden to developers. This may make a site financially unfeasible or it may make a site more competitive with other sites. This may further exacerbate illegal dumping practices or stimulate disposal to competing firms.
- Should monetary payment requirements also be made retroactive to existing HWMFs? This may be difficult to legally do. If they are not, however, existing sites will have a competitive advantage over new sites.
- Specific monetary payment requirements may make it difficult for HWMFs to obtain private capital financing. Specific formula approaches are, in effect, on-going liens on a developer's HWMF revenues. This may inhibit the developer's ability to obtain private financing.

IN-KIND REPLACEMENT/RESTORATION ACTIONS

Description

Instead of providing a monetary payment to a community or an affected party, the provider in this technique offsets impact costs by replacing the affected resource or service.

Examples

This technique is widely used in the siting of energy facilities. The Tennessee Valley Authority (TVA) uses this technique in the siting of its nuclear and coal-fired power plants. For example, in the mid 70's TVA negotiated a very complex compensation agreement with several communities, the State of Tennessee, and the Nuclear Regulatory Commission for the construction of a nuclear facility in Hartsville, Tennessee. Among the things agreed to

TVA was to construct necessary traffic improvements and education facilities. In addition, they agreed to provide TVA expertise to supplement local officials deal with housing and planning impact issues.

Potential examples in HWMF siting include the following:

Resources

- Replacement of restoration of property, vegetation, wetlands, valued open space affected by the HWMF

Services

- Repaving of access roads to a HWMF
- Reconstruction of transportation route to a HWMF
- Replacement of municipal water supply wells
- Provision of fire truck to the host community for emergencies
- Training of local police and fire personnel in hazardous waste emergency response

Suitability

This technique is most appropriate for those impact issues that a developer or the State is able to directly provide an in-kind response. For a private developer, this ability may be limited. The fire truck response is a good example of what a developer can provide. A variation on this technique is the joint use of a service or facility, such as a fire truck. Wes-Con, for example, in Idaho has made available its fire truck to the host community for dealing with off-site hazardous waste emergencies.

In general, the HWMF developer will be most able to provide limited nonconstruction-related items, such as fire trucks, training, and property. The State, on the other hand is better able to provide items involving construction.

In-kind replacement actions are less able to deal with intangible issues, such as quality of life and community stigma problems. The mere presence of the HWMF in a community may raise the community image problem. There is very little a developer can do to directly compensate for this issue using in-kind replacements.

General Issues

The major advantage of using in-kind compensation techniques is their ability to directly deal with specific impact issues. Unlike monetary payments to communities that may never reach impacted individuals, these techniques directly offset costs and impacts associated with a HWMF. Secondly, they are particularly appropriate in muting bribery or payoff criticisms associated with the use of monetary compensation. This is a major advantage in overcoming public opposition to a HWMF.

In terms of other issues, there are several:

- The developer or the State may not be able to provide some of the in-kind services and resources shown in the examples; it may be a lot easier to simply pay the host community money.
- The host community may not want the provider involved in replacing resources or services; communities may wish to handle these functions by themselves.
- Similarly, an affected resident may also rather receive straight monetary payments rather than some comparably valued resource.
- A key concern is the issue of one-time replacement versus on-going replacement. Some of the in-kind services and resources lend themselves to one-time compensation, such as the replacement of land needed for the HWMF. Other service impacts of the HWMF may be recurring. If the compensation agreement reached with the community covers these types of impacts, then the compensation provider may be involved in long-term on-going cost commitments.

State-provided in-kind compensation measures are appropriate obviously
state-owned facilities. The extent to which the State wants to provide
them in private sector HWMF situations will depend on the following types of
considerations.

- Whether the State is interested in using State-provided compensation as a means of subsidizing the private HWMF developer;
- Whether the State is in a better position to provide the in-kind compensation more cheaply or more quickly than the private sector;
- Whether the State provision will help to resolve stumbling blocks in the negotiation between the developing community and then speed up the siting process;
- Whether the State in-kind compensation is viewed as a political precedent problem in terms of compensating other communities for nuisance facilities or in terms of subsidizing other private sector development activities;
- The extent to which out-of-state wastes are accepted at the HWMF and whether the State is willing to use compensation in light of its likely subsidy of out-of-state wastes.

In terms of requiring the private sector to directly provide in-kind services, the concerns raised in the discussion of monetary payments apply here as well. The principal concern is the economic burden placed on the developer and, in turn, the impact of this burden on the developer's ability to obtain private financing for the facility.

In general, the State requirements on developers for in-kind services should be done with great care. The developer is usually more able to provide monetary compensation rather than specific services. One State, Massachusetts, has developed compensation legislation that allows the community and the developer to negotiate which in-kind services the developer will provide. The State, through a hazardous waste siting council, reviews the developer-community agreement and may recommend additional adjustments.

4 CONTINGENCY FUNDS: UNEXPECTED EVENTS

description

This technique involves a promise to pay for impact issues that cannot be reliably predicted or that cannot be mitigated. As discussed previously, risk will always remain in a HWMF area.

This compensation technique is closely related to the mitigation activities, such as monitoring and emergency response activities, that attempt to prevent or reduce impacts from occurring. Recognizing that operational activities are not likely to completely minimize risk, this technique ensures that contingency payments would be forthcoming. Contingency funds provide communities with the assurance that should an adverse event occur, the resources are available to compensate for adverse impacts.

This section discusses techniques appropriate for unexpected events. For the purposes of this handbook, contingency arrangements for property value impacts are discussed separately in the next section because of the paramount importance of this issue in HWMF siting.

Examples and Suitability

Contingency funds can vary along several parameters: funding procedures, events covered, and impacts covered. Funding for contingency funds can come from the State or the private sector. Additionally, there is a time variation --one-time, as needed, continuing. For example, the State can appropriate one lump sum from its general fund or appropriate an incremental amount annually. Alternatively, States could have bond issues on a one-time only or periodic basis. Finally, they could tax hazardous waste generators, transporters, or facility operators.

The facility owner could also make a lump sum payment prior to opening the facility; purchase additional liability insurance beyond the minimum permit

irements; pay into a State-operated fund on a waste processed basis; reimburse the fund on a dollar-for-dollar basis for expenditures related to the waste; or a combination of the above.

Several States--Michigan, New Jersey, Wisconsin, Delaware--require HWMFs to pay a certain amount per gallon of waste handled into contingency funds. Michigan, on the other hand, requires HWMFs to make one lump sum up-front payment. Delaware requires a surety bond and a tonnage fee. Other States, like New Jersey, require the fee once the fund reaches a certain level, but requires any HWMFs that have a problem to reimburse the fund.

The funds can cover a range of possible events and incidents:

- transportation-related spills, or accidents
- incidents at the facility (explosions, accidental releases)
- failure of mitigation measures (lining ruptures)
- monitoring
- post closure accidents

Finally, the funds can address a number of potential impacts to either individuals, corporations, or communities. These could include

- property damages
- health damages
- natural resource damages
- economic damages (such as loss of work, loss of business)
- temporary or permanent relocation costs
- costs of incident management and control
- costs of long-term monitoring

New Jersey, for example, uses this fund to provide compensation to individuals, communities, and businesses for real and personal property damages, clean-up costs, health bills, lost income due to ill health, and loss of business.

Other State generally authorize more limited use of the funds.

General Issues

The major advantage of contingency funds is that they deal with risk. It is impossible to accurately predict all possible adverse impacts in advance of HWMF operation. Furthermore, no mitigation measure is 100% effective: accidents will occur and control technologies fail. Contingency funds address these problems and provide a means to compensate for the impact and the long-term adverse effects of incidents.

However, there are certain problems associated with the funds. The most serious is, obviously, cost. Tipping fees could affect the HWMF's continuing economic viability, while lump sum up-front payments could impact the feasibility of constructing the HWMF in the first place. Furthermore, there is the opportunity cost of tying up money in a contingency fund. If the fund is supported by State money, this money is lost to other State programs. If the HWMF provides the contingency money, its developer is prevented from spending the funds on other compensation measures or other economic ventures. Clearly, the more types of incidents and the more adverse impacts the fund covers, the greater the potential expenses and replenishment frequency.

An additional issue related to the design of such a fund is disbursement. Such funds require a mechanism for determining when the situation warrants expenditures from the fund, and what those expenditures should be. This is a potential area for State involvement.

State Provision Versus Private Sector Requirement

State requirement on the private sector for surety bonds and liability insurance are well-established and will be necessary for all HWMFs. RCRA mandates that operators put up surety bonds and obtain liability insurance.

Surety bonds, to ensure coverage of closure costs, can be canceled, however, and liability insurance mandated by the Federal government of \$1 million/urrence/firm and \$2 million annual aggregate might be exceeded in the event of a major catastrophe. States, therefore, must insure that cancellation provisions in a surety bond contain a 90 day notice provision.

States can also supplement the private sector's contingency fund coverage with its own emergency response fund as discussed above. There is some precedent for State and public sector participation in this area--catastrophic health insurance and crime victim compensation are two examples. The key dilemma faced by States is the cost burden placed on the HWMF developer versus incident and impact coverage desired.

4.5 CONTINGENCY FUNDS: PROPERTY VALUE IMPACTS

Description

While empirical evidence is fragmentary and often conflicting, a nuisance facility, such as a HWMF, is likely to stimulate some degree of property value loss in a certain area around a HWMF. Such impacts are also possible, to a lesser extent, along routes heavily travelled by waste haul vehicles. Changes in property values reflect many of the other impacts raised in this handbook--noise, traffic, risk, odors. As these first order impacts are unlikely to be completely mitigated, some types of contingency fund is likely to be a common compensation need in HWMF siting.

A corollary impact to property value effects suffered by individuals and corporations is the tax base loss resulting in a community. Decreased property values mean lower tax receipts and revenues for a community. This section discusses alternative ways for compensating property value and tax base losses.

Initial Compensation Program Considerations

Before discussing alternatives, two important questions require some consideration: How are property losses determined, and who is eligible from these payments?

Implementation of property value compensation technique requires a comparison of two separate property value figures for each eligible property: one estimate of the value of the property in question made prior to the introduction of the HWMF and a second estimate taken after the facility is in operation. This second estimate, of course, must be adjusted for general price changes which are independent of the facility in question. How are these two estimates to be made?

The pre-project fair market value of an impacted property is only slightly less problematic than the post-project valuation. If local tax assessments do not reflect current market value, ideally an independent set of appraisers can determine property values. This assumes, as discussed below, that an "impact area" can be determined. This, of course, is not a trivial determination. An additional complexity revolves around the problem of how to define the pre-project point in time. The mere discussion of a HWMF is likely to affect property values in the proposed site area. Appraisers may have to use previous data for a benchmark period.

A second property value figure is also necessary. How should the post-project fair market value be calculated? The sales price of the property in question, adjusted for land price inflation is, of course, one option. Serious problems arise, however, with a program which keys compensation exclusively to sales price declines. In particular, in order to arrive at a sales price figure and thus collect damages, the home owner must sell his or her home. Thus, a compensation scheme predicated exclusively on sales

price figures provides perverse incentives to local homeowners: the policy might contribute to community disruption.

Besides these valuation considerations, there is the key issue of eligibility. Is everyone in the host community eligible? Certainly, this would prove to be an unmanageable compensation situation. Property value compensation techniques require limits on eligibility--both spatially and temporally.

Alternatives and Issues

There are two basic means for dealing with property value losses: purchase of the affected property at a fair market value plus compensation price; or some method of cash compensation to reflect the appraised property value loss. The first alternative involves either the HWMF developer or the State in the property acquisition business. This is a major drawback and because of the numerous issues involved in such an approach it is not considered in this handbook.

There are several issues and variations associated with the second alternative: percent of loss to be compensated; trigger mechanism; time limit on compensation period; eligibility of new versus existing property owners. Each of these issues is discussed:

- Amount of compensation: A full 100% compensation suffers from economic efficiency problems. In particular, if property owners were assured of 100% compensation, they would have no incentive to search for the highest-bidding customer for their home. Some fixed percent, such as 80%, may have to be considered.
- Trigger Mechanism: Should compensation be triggered by a decision to sell? If a property owner in the eligible area decides to sell his or her home, the developer or the State could pay a fixed percent of the difference between the pre-project assessed fair market value of the home, and the subsequent sales price, adjusted for property inflation. Should the property owner decided not to sell, compensation is still available. In this case, the provider would pay a fixed percent of the difference between the pre-project appraised fair market value of the home, and a second adjusted appraised value taken after the facility is in operation.

- Compensation Period: Compensation should probably be paid only once, after the facility is in operation, but before a certain set period has elapsed. The single compensation payment reduces administrative load and avoids double-counting. The requirement that compensation payments be delayed after the facility is in operation would avoid the payment of short-term property value losses generated by construction impacts. Finally, a time limit on compensation claims (e.g., 5 years) would reduce administrative load and minimize problems of calculating land inflation over long periods.
- Eligible Property Owners: One approach would compensate only those individuals who owned impacted property prior to the introduction of the HWMF. Once a facility is introduced into an area, property values will adjust to reflect the impact of that facility; thus, individuals who purchase homes in the impacted area after the facility is introduced will already have been implicitly compensated by the market through the reduction in the price they must pay for that home. In short, if an individual with full knowledge chooses to purchase a home next to a HWMF, the State or a HWMF developer should probably not be obligated to compensate that individual for having made that choice. Eligibility will also require definition in terms of spatial considerations. Alternative criteria, all imperfect in some respect, would include: geography, topography, arbitrary distance, transportation routes, or some negotiated test of "interest".

Tax Base Loss Impacts

Accompanying individual property value losses are tax base losses to a community. The approach that is used to compensate a community for the loss must be keyed to some of the issues raised in property value compensations, namely: impact area and compensation period. Before a community can attribute tax base losses to a HWMF, an eligible impact area and an eligible period for compensation would require definition. The tax base loss issue, however, is also complicated by offsetting tax base gains in a community due to a HWMF. Tax base gains? It is not improbable that the presence of a HWMF would stimulate industry to locate in a community; or minimize the loss of some existing industries. Attributing tax base losses to HWMFs appears to be highly questionable. Consequently, contingency arrangements do not seem to be a high priority. Rather, such impacts if they do occur, would probably be best handled in a lump sum type of cash payment.

State Provision Versus Private Sector Requirement

There is considerable experience with after-the-fact land value compensation in facility siting, particularly transportation facilities. In these situations, the Federal and State governments have provided compensation without resorting to owner-initiated court suits. There is also a substantial body of case law for property value compensation due to nuisances. (See, for example, D. Hagman and D. Misczynski, Windfalls for Wipeouts, American Society of Planning Officials, 1978) The research for this handbook, however, has uncovered very limited experience with property value compensation in the form of pre-project contingency arrangements. During considerations for moving the capital of Alaska from Juneau, legislation was passed in the Alaska legislature authorizing the State to purchase property at a fixed percentage of present value if property owners were not able to sell their houses within a certain period of time. In Montgomery County, Maryland, the developer of the White Flint Mall offered to abutting property owners a property value compensation guarantee. The developer hired an appraiser to appraise the pre-Mall values of the approximately ten properties. According to the agreement signed by the developer and the land owners, if property owners wanted to sell their property within 5 years, and the price offered fell below the pre-project appraised value, then the developer would: 1) pay the difference; or 2) buy the property. It is unlikely that the compensation guarantee will have to be exercised. Property values have, in fact, increased due to the popularity of the Mall.

While the Mall example is not entirely analogous to HWMF siting, one lesson learned from the Mall experience is useful: property value compensation guarantees are important chips in facility siting negotiations. Property value concerns are likely to be paramount issues in HWMF siting. Some provisions appear justifiable. While States can and have resorted to after-the-fact

property value compensation, the constitutional difficulties faced in many States concerning long-term commitments appears to preclude a lead role for the States in directly providing through State financing a contingency fund. Consequently, the private developer, at least from a logistical viewpoint, is best suited to provide for contingency arrangements. The economic burden is likely to be minimal, particularly if the compensation period is defined as a short-term period as suggested above. State or host community involvement, however, is warranted for defining impact areas and providing oversight in the appraisal process.

SECTION 5

INCENTIVE TECHNIQUES

.1 INTRODUCTION

Unlike mitigation or compensation techniques which attempt to address costs or impacts incurred in the siting of a HWMF, incentives may not be specifically directed at HWMF impacts. Incentives represent additional payments in the siting process. They attempt to provide benefits above and beyond the impacts associated with a HWMF. As mentioned in Section 1, the rationale for incentives is primarily goodwill and strategic in nature. There is obviously a fine definitional line between compensation and incentives. Impact-related techniques refer to measures that address specific HWMF impact issues, but are in addition to whatever compensation or mitigation techniques used to address the impact issues. The ability to define incentives as impact-related techniques depends on site specific impacts as seen in Exhibit 9. The examples shown in Exhibit 9 are representative examples. There are undoubtedly additional variations on donation recipients or on the types of additional public services/amenities that could be provided in a particular community.

There has been a moderate number of examples involving the use or offering of incentives in the siting of HWMFs. For example, Wes-Con, Inc. used several incentives in the siting and operation of a hazardous waste disposal facility in an abandoned missile silo complex in Grandview, Idaho. The site is over 100 acres in size. Wes-Con offered several incentives to the local area, including:

EXHIBIT 9

EXAMPLE INCENTIVES

TYPE	GENERALLY UNRELATED TO HWMF	MAY BE RELATED OR UNRELATED TO HWMF IMPACTS	APPROPRIATE FOR PRIVATE PROVISION	APPROPRIATE FOR STATE PROVISION
Provision of jobs to local area residents	X		X	
Free Disposal or preferential rates to local business and the community	X		X	
Additional public services and amenities		X	X	X
<ul style="list-style-type: none"> o fire truck o ambulance o parks, o recreation areas o road improvements o etc. 				
Additional risk manage- ment activities:		X	X	X
<ul style="list-style-type: none"> o independent monitoring and inspections o emergency res- ponse procedure 				
Additional monetary payments to the host community		X	X	X
<ul style="list-style-type: none"> o additional taxes o additional tipping fees 				

EXHIBIT 9 (Cont'd)

EXAMPLE INCENTIVES

TYPE	GENERALLY UNRELATED TO HWMF	MAY BE RELATED OR UNRELATED TO HWMF IMPACTS	APPROPRIATE FOR PRIVATE PROVISION	APPROPRIATE FOR STATE PROVISION
cleanup of existing abandoned hazardous waste facility		X	X	X
grants to local charitable organi- zations	X		X	
guarantees or backing of municipal bonds			X	X
refunding of municipal bonds at rates more favorable to the municipality than pre- existing market rates			X	X

use of Wes-Con's firefighting equipment (the area is rural and has no existing equipment); the use of its first aid equipment; and the use of its well water local cattlemen. The county and the area cattlemen, however, have not used any of these offers since the Grandview site began operations in 1973.

Wes-Con also received permission to site a hazardous waste disposal facility in 1977 in a nearby missile silo complex in Bruneau, Idaho. It has not yet developed this site as a HWMF and is contemplating alternative uses for the site. The success in getting approval for the Bruneau site, however, is attributable, in part, to Wes-Con's successful use of incentives at its Grandview site. During the operation of its Grandview site, Wes-Con has made donations to local charities and recreation events (total = \$15,000) and has provided free pesticide disposal service to area farmers. The free disposal service is estimated to be equivalent to \$5,000/year. In addition, Wes-Con has made an effort to hire its employees locally; provided emergency disposal service during natural disasters; and volunteered the use of its heavy equipment to local residents.

The use of incentives to promote goodwill has also been evident in other HWMF sites. Chemical Waste Management, Inc., which operates a disposal facility in Livingston, Alabama, donated an ambulance to the community. Kansas Industrial Environmental Services (KIES) which operates a land disposal facility for hazardous wastes in Furley, Kansas, supplements local snow plowing efforts with its own equipment.

There have also been offers of incentives in unsuccessful HWMF siting situations. Allied Chemical, Inc. for example, sought to locate a secure landfill in nearby Rossville, Maryland to dispose chromium waste from its manufacturing operations in Baltimore. The siting attempt, which generated considerable opposition and eventual rejection, was marked by Allied's offer to donate

8 acres of its 60 acre site for use as a local park.

5.2 SUITABILITY

In HWMF siting situations when the provider has responsively addressed impact issues, incentives may be appropriate given the following considerations:

- As a means for showing commitment in addressing impact issues, the use of incentives may be appropriate. Thus, if the loss of open space for the HWMF is an issue, then providing parkland above and beyond what was lost would be an incentive that might help to overcome opposition.
- The use of incentives that are unrelated to impact issues has to be done carefully. These types of incentives should be based on a careful assessment of needs in a community. An offer to donate land for a park may have no strategic or goodwill clout if the area has adequate recreation resources. An offer to accept local industry wastes for free, however, may be done for little cost to the developer and have tremendous political and economic value in a community where local industry is having a difficult or expensive time disposing of its hazardous waste. Similarly, a rural area with few public amenities or services is more apt to positively respond to such incentives as donated ambulances, fire trucks, or recreation facilities.
- The Wes-Con, Inc. example also illustrates the value of using incentives during the operation of a facility. The goodwill that accounts to these incentives is an important factor in keeping a HWMF in business.

The most important consideration in the use of incentives is their potential to backfire, i.e., to be counterproductive in addressing public concerns in the siting of HWMFs. Research conducted for this handbook with HWMF firms revealed a sensitivity to this issue. Some State hazardous waste officials also view incentives that are totally unrelated to HWMF impact issues as bordering on bribery. In short, incentives that are non-responsive to impact issues that remain unaddressed can be potentially dangerous. They can jeopardize or nullify well-intentioned efforts to deal with public concerns. There is a greater likelihood that incentives will be accepted if the community or potential recipient raises the notion first.

While the backfiring issue is a clear-cut risk associated with the use of incentives, incentive costs are variable. Unlike mitigation or compensation, where State or local regulations or the severity of the impact may dictate the amount and form of compensation, the use of incentives operates more on a free market basis. The HWMF developer or the State has considerable flexibility in using incentives. A provider must essentially make a judgement on what the siting market requires in terms of the type and amount of incentive. How much should the provider pay in incentives? It is not possible to answer that question here, but two factors should be considered:

- Long term monetary payments to the community (tied to the amount of waste being disposed) that are above and beyond compensation requirements are relatively more expensive than one-time or ad-hoc incentives such as the donation of public amenities.
- In-kind services will generally be the least expensive incentives (and may have just as much strategic value). These include free disposal service to local industries and the sharing of HWMF facilities and equipment (e.g., fire trucks).

5.3 STATE PROVISION VERSUS PRIVATE SECTOR REQUIREMENTS

It is generally inappropriate for the State to require a private developer to provide benefits above and beyond what is required to deal with actual impacts. While the State has wide latitude in what it can require of a private developer (see Appendix A) incentive requirements are not likely to be favorably received by a developer who has carefully provided an adequate compensation package. Surveys with private developers conducted for this handbook indicate that they do not see incentive requirements as an appropriate State role. They feel that incentives are basically a concern of the developer and the community. The private sector is not opposed to State use of incentives to supplement the private developers incentives. As seen in Exhibit 9, there are a number of opportunities for the State to potentially use in HWMF siting. State provision should be done with caution since these are more discretionary actions than

mitigation or compensation activities. Thus, the public may not view them as being legitimate State activities.

APPENDIX A: POWER TO IMPOSE IMPACT RESPONSE REQUIREMENTS ON A HWMF DEVELOPER

In the absence of a statutory provision expressly limiting such power, an agency or board, authorized by State law to issue permits for siting hazardous waste management facilities (HWMF), may impose certain conditions on its approval of applications for such permits. Among these may be a requirement to compensate the community or individual property owners for the losses they will suffer as a result of the facility's location.

Nearly every type of governmental action relating to land use regulation or facility siting approval has been made subject to conditions at one time or another, and such conditions have generally been sanctioned in the courts.¹ Typically, such conditions are imposed in order to protect those interests that have been placed within the ambit of the permitting agency or board. The board may determine that such conditions are needed in order to protect the interests it has been charged with preserving. It will thus work out with the developer the specific measures that must be undertaken or promised prior to permit issuance. Only after the conditions have been met will the authority issue the permit.

Conditional permits are likely to be issued - and to be judicially approved - whenever the permitting authority is given discretion as to whether to approve or disapprove a particular permit application.² In general, the rule that has been applied in the courts to evaluate the propriety of particular conditions on site approvals has been that the condition imposed must bear a

"reasonable relation" to the purposes and intent of the enabling
3
enactment. There does not appear to be any generic limitation on
the types of conditions that may be imposed, as long as this
reasonableness criterion is met. Thus, for example, if one pur-
pose of HWMF siting legislation is to protect the interests of
communities in which a facility is to be located or those of
abutting property owners, any condition reasonably designed to
serve such purposes will likely be sanctioned. A condition requir-
ing that compensation be paid appears to fall within this rule.

Indeed, courts have approved "required dedications" of land
and money to compensate for the adverse consequences of a devel-
opment when they were made conditions of permit issuance.⁴ The
only limits that have been placed on such requirements is that the
funds or other property demanded must be intended for a purpose
related to the use to which the property will be put, and must
not be so great as to be regarded as unreasonably onerous, in
light of that use.⁵ Thus, as long as compensation requirements
are limited to payments that approximate the likely damages that
will be caused by the facility, they should be legally permitted.

In formulating compensation requirements as conditions for
site approval, permitting authorities should take care to
measure the required compensation according to the magnitude
of the harm. This may be extremely difficult, if not arbitrary,
however, in dealing with the intangible impacts.

The fact that permitting authorities have considerable lati-
tude in formulating compensation requirements does not mean that

their discretion is unfettered, however. Rather, their powers are limited by principles of due process and equal protection, as well as by the provisions of any state administrative procedure act that applies. A board's actions may thus be subject to challenge, for example, if compensation conditions are imposed in some instances and not in others, unless there is some rational explanation of this difference.

In the absence of discrimination or specific arbitrary and capricious conditions that violate constitutional or administrative law principles, however, a HWMP permitting authority may feel free to impose conditions requiring payment of compensation in proportion to the damages expected actually to be imposed by the facility.

APPENDIX B: INTERSTATE ISSUES AND AGREEMENTS

Variations in compensation policies among neighboring States can have undesired impacts on a HWMF's economic viability, and the flow of hazardous wastes into the State. Because of these potential problems, States may want to develop interstate agreements on compensation strategies. There are potential adverse effects whether the State, or the facility bears the cost of compensation. In instances where the facility pays compensation, these expenses will increase the facility's operating costs. Therefore, any HWMF that provides compensation is likely to either charge higher rates or be less profitable than a facility that does not face these expenses. If a HWMF charges higher rates, generators will prefer to use other facilities in the area. If a HWMF is less profitable, it is a less viable investment. These factors could either keep facilities from being built in the first place, or ultimately force compensation-providing facilities out of business.

If, on the other hand, the State bears the cost of compensation while another nearby State requires the facility to bear this burden, the situation is reversed. Here, the rates at the HWMF in the State that provides the compensation will be lower which may attract wastes into the State. This has the undesirable side effect of increasing the risk of transportation related accidents, wear and tear on the transportation routes, and may be bad public relations for the State. Furthermore, the more wastes handled at the facility, the greater the expense to the State of providing compensation.

Because of these potential problems, States may want to resolve policy differences through formal or informal interstate agreements. They would have two main options:

- jointly agree on compensation requirements; or
- agree on locations for common facilities and jointly provide compensation.

Jointly agreeing on compensation requirements might be difficult. Given the site specific nature of compensation needs, given regulatory differences among States and given differing political contexts, identifying an appropriate common level of compensation, and implementing it might be complicated. But even some minimum agreement, for example, requiring HWMFs in the States involved to provide some minimum compensation, or simply agreeing that the States will provide the compensation themselves would alleviate some of the potential problem. Furthermore, these could be agreed upon informally without establishing official institutions or memoranda of understanding.

Should States agree to have common HWMFs and provide the compensation jointly, they would face endless options. For example, the States could pay lump sums into a common fund, or pay on a tonnage shipped basis, or they could develop common generation taxes and pool these in a compensation fund. They also could agree to provide various mitigation measures such as:

- shared maintenance of transportation routes;
- shared emergency preparedness/response;
- shared monitoring;
- shared laboratory facilities/technology transfer;
- transfer stations.

These arrangements could be made through separate memoranda of understanding among State agencies, through established regional commissions such as the New England Regional Commission or the Delaware River Valley Planning Commission, or through special newly developed hazardous waste commissions. The Resource Recovery and Conservation Act expressly allows for interstate agreements and organizations for hazardous waste management. While a detailed description of potential interstate arrangements is beyond the scope of this handbook, Appendix F of Arthur D. Little's report to the Hazardous Waste Management Program of the New England Regional Commission, "A Plan for Development of Hazardous Waste Management Facilities in the New England Region", includes such a discussion.

APPENDIX C: POWER OF A STATE TO PROVIDE IMPACT RESPONSES

The power to tax and spend in the public interest is a fundamental "attribute of sovereignty"⁶ possessed by every state. Under this power, states are free to determine what goods and services they will provide and how they will be financed.

An incentive or compensation payment may take either of two forms: (1) It may be an explicit grant of funds or other value to those who are affected or are expected to be affected adversely by a hazardous waste management facility; or (2) it may, in effect, be a contractual purchase of a "package" of goods and services from the parties who receive the payment. The package may include affirmative cooperation in siting a hazardous waste management facility (HWMF); it may include promises to forego legal avenues to challenge the siting; or it may include other similar elements.

The effects of either type of payment are likely to be the same. In both cases, the availability of compensation or similar cash payment may serve to reduce opposition to a HWMF. If opposition is reduced, the public may benefit because a needed facility can be developed more readily, keeping disposal and product prices down. A State is free to make the judgment that the public interest is thereby served.

Once it is determined that the public will benefit from such community cooperation in the HWMF siting process, or promises to forego legal rights to intervene in opposition to the

exercise their police powers in certain ways in the future. If such a promise is the only quid pro quo for a State's payment of compensation, the state has received nothing in return for its expenditures, and it is possible to assert that the payment is therefore not in the public interest.

The short answer to this objection is that the State's spending power is not limited to situations where the state itself receives a benefit in return. Countless public expenditures are made more or less as pure grants, without even a semblance of quid pro quo. The true test of State power is not whether the State will benefit from the expenditure, but whether the public interest is served.

This short answer however, ignores the fact that, if the state has secured only an unenforceable promise in exchange for its expenditure, the public has also received no benefit from the transaction. Moreover, unlike welfare payments where the simple transfer of funds is regarded as a public benefit because it serves the objective of equitable wealth distribution, payments to local governments where HWMF are proposed do not by themselves serve the public interest. The only way to assure that the public interest is served by incentive payments to local government--and thereby to remove all doubt as to their validity¹⁰ is to structure such arrangements so that the payments are not made until after the bargained-for action is complete.

Nevertheless, the determination of where the public interest lies is normally left to the executive and legislative branches

of government. Courts will normally not interfere with a determination that a public purpose is served by an expenditure.¹¹ Thus while it may be impossible to assure that every compensation or incentive payment in fact advances the public interest, a State determination that it will is all that is required in order to bring the payment within the scope of the state's power.

APPENDIX D: ALTERNATIVE LEGISLATIVE APPROACHES

(Available in final handbook)

APPENDIX E-1

APPENDIX E-1

Model Compensation Agreement Between the Town of Riverdale and Waste Management, Inc.

Introduction

The model agreement sets forth a number of provisions for mitigation, compensation, and incentives to the "Town of Riverdale" for the potential and certain impacts of a hazardous waste management facility (HWMF) to be constructed and operated by "Waste Management, Inc."

The major legal problem associated with agreements of this type is securing proper "consideration" from the governmental signatory so that the agreement is binding and enforceable. Consideration is what each party to a contract does, promises, or forgoes in exchange for the actions, promises, or forbearance of the other party. A contract is not enforceable unless consideration has been given by each party for the obligations undertaken by the other. In the model agreement, many promises are made by Waste Management, Inc. Therefore, care must be taken that the Town of Riverdale gives consideration for all of these promises.

In a contract such as the model agreement, the necessary consideration might conceivably take the form of a promise to accept the HWMF or not to oppose it. Note that no such promise appears in this agreement. Even if one did appear, it might be null and void because it exceeded the Town's power, since a Town ordinarily may not contract away its right and duty to serve the public interest.

Alternatively, the contract might include a promise to forego any legal remedies that may be available against the owner to obtain damages for the adverse impacts of the HWMF. That promise is also not made in the model agreement (and indeed is explicitly rejected in the proviso of paragraph I.V.A., since few towns would likely be willing to agree to it.

Another alternative would be for the agreement to recite all of the harms possibly to be suffered by the Town and to state that the site owner's promises are to compensate for those harms. This approach was not taken for two reasons: (1) In reality, it would be merely another form of a promise of forbearance such as is rejected in paragraph I.V.A. (2) Since many of the impacts recited would not be actionable in court (for example, because they would not render the facility a nuisance), a promise to forego legal action might be "illusory" and thus not proper consideration.

A fourth alternative is to tie certain promises to certain harms and thereby to trade forbearance from action for those harms only for the compensation agreed to. This approach is explicitly taken in paragraph IA. However, this is only a partial solution, and the model agreement emphasizes this fact by reciting a list of harms in the preamble much longer than those to be compensated under paragraph IA.

The alternative selected, therefore, was to make the entire agreement contingent upon some action by the Town, rather than any promise. That action is the passage of a resolution supporting the site owner's application, but it could as well be a resolution approving the site, if such a resolution were part of the necessary regulatory procedure. Thus, paragraph V.A. makes the compensation agreement a "unilateral" contract which does not go into effect until one side--the Town--has completed its obligation under it. If the Town does not pass the necessary resolution, the contract is not effective. If it does, that action is adequate consideration for all the promises made by Waste Management, Inc.

Sections I, II, and III of the model agreement contain a few examples of compensation, mitigation, and incentives that can be included in the agreement. Many more examples, of course, could be devised.

I. Cash Compensation and Fees

Paragraph A. of this section contains conventional tied-impact payments for the capital expenses and start-up costs of servicing the HWMF. Paragraph B. sets up a tipping fee and allows it to be renegotiated from time to time.

II. Provision of Services and Other Compensation

As an incentive, paragraph A. promises free disposal services to the Town or its designee. Paragraph B. promises to dedicate a recreational facility to the Town. This promise may be regarded as a compensation device, if there will be some loss of recreation in the Town as a result of the HWMF, or it may be regarded as an incentive otherwise. Note that the preamble says nothing about lost public facilities as an impact of the HWMF. Such a reference could, of course, be incorporated if it were needed.

III. Conditions of Construction and Operation

Paragraph A. provides for liability insurance, in the event of third party damage. Paragraph B. includes some mitigation measures that will alter the operation of the HWMF.

IV. Additional Compensation in the Event of Breach

This provision could be completely removed from the agreement without affecting the substantive obligations under it.

The section is purely procedural and establishes a mediation and arbitration procedure for handling breaches of contract conditions. If this provision were omitted, such breaches would have to be litigated in court. In either event, however, the same substantive rights would be at issue.

V. Effective Date

As noted above, this section transforms the model agreement into a unilateral contract and solves the problem of consideration. Paragraph A. also states that the agreement is not effective unless the site is approved.

Paragraph B. is designed to protect the site owner in the situation that the Board passes the required resolution but then either it or its members or other community representatives take action to undermine the effectiveness of the resolution. In such a case, the site owner may terminate the agreement if it alerts the Siting Board of the fact in time for it to delay its decision on the application until it has had time to consider the effect of the lack of an agreement. The same paragraph also protects either party in the event that anything else occurs to make the agreement unsatisfactory during the possibly long period of time between the filing of the application for site approval and the ruling on it.

Model Compensation Agreement

Between

The Town of Riverdale
Town Hall
Room 101
Riverdale, U.S.A.

and

Waste Management, Inc.
101 Main Street
Riverdale, U.S.A.

WHEREAS Waste Management, Inc. plans to build a hazardous waste management facility (HWMF) on a site which it owns in the Town of Riverdale, and which is located at _____; and

WHEREAS the construction and operation of the said HWMF will result in increased traffic in the Town of Riverdale, requiring additional expenditures by the Town of Riverdale for traffic control and road maintenance; and

WHEREAS the construction and operation of the said HWMF may result in odors, noise and/or air pollution and thereby cause damage to the residents of Riverdale and to public facilities owned by the Town of Riverdale; and

WHEREAS the construction and operation of the said HWMF may result in adverse impacts on the beauty and quality of the environment of Riverdale and thereby lower property values and reduce the property tax base of the Town of Riverdale; and

WHEREAS the construction and operation of the said HWMF may result in ground and/or surface water pollution and thereby cause damage to the public water supply owned and operated by the Town of Riverdale; and

WHEREAS the construction and operation of the HWMF will result in the need for additional expenditures by the Town of Riverdale for public services, including fire and emergency spill response services, facility inspections and ground and surface

water monitoring; and

WHEREAS the construction and operation of the HWMF may increase the risk of other damages to residents of Riverdale and/or to the Town of Riverdale; and

WHEREAS Waste Management, Inc. has agreed to undertake the mitigation measures specified in this agreement; and

WHEREAS Waste Management, Inc. has agreed to compensate the residents of Riverdale and the Town of Riverdale for such costs as are specified in this agreement;

The parties have agreed as follows:

I. Cash Compensation and Fees

A. Waste Management, Inc. shall pay the following amounts to the Town of Riverdale as compensation for the costs which will be imposed on it by the construction and operation of the HWMF:

(1) Upon approval of the site by the State Facility Siting Board: \$ _____, as capital for extensions of local services;

(2) Upon commencement of operation of the HWMF: \$ _____, as compensation for start-up expenses connected with extension of local services.

B. Waste Management, Inc. shall also pay the following amounts to the Town of Riverdale:

(1) During the two years commencing on the first date of operation of the HWMF, a fee of five cents (\$.05) per kilogram of waste delivered to the HWMF.

(2) Thereafter, a fee as mutually agreed by the parties from time to time; provided that, if the parties are mutually unable to agree on a fee at any time, the fee shall be set at an amount equal to three cents (\$.03) per kilogram times the number of whole years that the HWMF has been in operation.

II. Provision of Services and Other Compensation

A. Waste Management, Inc. shall provide, without charge, disposal services for up to _____ kilograms per month of hazardous wastes, as defined by the Resource Conservation and Recovery Act, 42 U.S.C. §6903(5), generated by any party or parties designated by the Town of Riverdale.

B. Waste Management, Inc. shall purchase the site located at _____, or an equivalent alternative site mutually agreed upon by the parties, and construct thereon a recreational facility to be dedicated to the Town of Riverdale, as further specified in Appendix I to this agreement.

III. Conditions of Construction and Operation

A. Prior to commencement of construction, Waste Management, Inc. shall purchase and maintain insurance coverage for liability to third parties for personal injury and property damage in an amount not less than \$ _____ per occurrence.

B. Waste shall be transported to the HWMF only along the route specified in Appendix II to this agreement. No wastes shall be transported to the HWMF except during the hours of 9:00 a.m. to 5:00 p.m. Mondays through Fridays. No more than _____ truck loads of wastes shall be delivered to the HWMF per day.

IV. Additional Compensation in the Event of Breach

A. In the event that any one or more of the conditions stipulated in this agreement shall not be met, the Town of Riverdale shall be entitled to further compensation for the damage caused by breach of the said condition. The compensation shall be determined according to the procedure described in paragraphs B, C and D below; provided that the Town of Riverdale's right to such further compensation shall not derogate from any right to other remedies which may be available to it under law.

B. In the event that a dispute shall arise over whether any one or more of the conditions stipulated in this agreement have been met, the question shall be decided by a committee of three experts, appointed according to paragraph C below. The decision of the said committee shall be final and binding on those parties.

C. The committee of experts shall be appointed as follows:

(1) In the event that Waste Management, Inc. rejects a claim by the Town of Riverdale that any one or more of the conditions in this agreement have not been met, the Town of Riverdale may demand that the claim be resolved by the committee.

(2) Within fifteen (15) days of written demand to this effect by the Town of Riverdale, each party shall appoint one member of the committee.

(3) The third member, who shall act as chairperson, shall be chosen by the two members appointed by the parties, and failing agreement between them, by _____.

D. In the event that the committee of experts shall decide that one or more of the conditions stipulated in this agreement have not been met, the additional compensation to which the Town of Riverdale is entitled under paragraph A above shall be determined as follows:

(1) The Town of Riverdale shall submit a claim to Waste Management, Inc., who shall respond to that claim within ninety (90) days.

(2) If Waste Management, Inc. rejects the claim, representatives of both parties shall meet, together with a mediator who shall be named by the chairperson of the committee of experts which determined that the condition had not been met.

(3) With the help of the said mediator the parties shall negotiate in good faith and shall attempt to evaluate the further costs imposed on Riverdale by breach of the relevant condition.

(4) Should the parties fail to reach agreement on this matter, the question shall be submitted to arbitration before an arbitrator who shall be appointed by the mediator.

(5) The arbitrator's decision, which will be final and binding on both parties, will stipulate the sum of compensation to be paid, or services to be provided and the time when such compensation will be paid or services provided.

(6) The arbitrator shall determine which of the parties shall pay the costs of the arbitration.

V. Effective Dates

A. This agreement shall become effective and binding on the parties when the application of Waste Management, Inc. for approval of the site is approved by the State Facility Siting Board if, within one month of the signing of this agreement, the Governing Board of the Town of Riverdale shall have passed the resolution, contained in Appendix III of this agreement, in support of the said application.

B. This agreement may be terminated by either party if both of the following conditions are met:

(1) Written notice of the termination, together with a request for a stay of the proceedings on the application of Waste Management, Inc. for approval of the site by the State Facility Siting Board is received by the Board prior to its ruling on the application.

(2) Written notice of the termination is delivered by hand to the other party at the office address provided in the heading of this agreement, above.

APPENDIX E-2

Model Compensation Agreement Between Waste Management, Inc. and John F. Kane

Introduction

The model agreement sets forth a number of provisions for mitigation, compensation, and incentives to "John F. Kane" for the potential and certain impacts of a hazardous waste management facility (HWMF) to be constructed and operated by "Waste Management, Inc."

The problem of securing proper "consideration" is not as difficult in private compensation agreements as it is in agreements with local governments since private parties may freely agree to support a HWMF in the future, regardless of the public interests affected. Nevertheless, the best structure for a private compensation contract is the same as for an agreement with the government: a unilateral contract. Such an agreement does not go into effect unless one of the parties (here, John F. Kane) completes the action that constitutes the consideration for the other party's promises.

Sections I, II, and III of the model agreement contain a few examples of compensation, mitigation, and incentives that can be included in the agreement. They differ, of course, from the items contained in the model agreement with the Town of Riverdale. Some of the provisions, however, are similar.

I. Cash Compensation and Fees

Paragraph A. of this section contains a single lump sum fee stated to be compensation for the major construction impacts of the HWMF. Paragraph B. sets up a monthly fee in exchange for continued forbearance from bringing an action for damages. This fee may be renegotiated from time to time.

II. Provision of Services and Other Compensation

As an incentive, paragraph A. promises free disposal services to John F. Kane. Paragraph B. promises to create a buffer strip between the HWMF and the abutting site. This promise is a mitigation device, peculiarly suited for dealing with abutters. Another mitigation device appears in paragraph C., which provides that Waste Management, Inc. will pay the costs of ground and surface water monitoring on the abutting site.

III. Conditions of Construction and Operation

Paragraph A. provides for setbacks and sideyards, to mitigate the impact of the HWMF further. Paragraph B. includes additional mitigation measures in the form of spill prevention practices.

IV. Additional Compensation in the Event of Breach

This provision, unlike the similar one in the public compensation agreement, could not be completely removed without affecting the substantive obligations of the parties. The section does establish a procedure for handling damage claims arising out of the operation of the HWMF and creates a fund to compensate those claims. However, the section permits compensation in instances where the harms caused are not actionable in a court proceeding either as a breach of contract or as a tort. Note that John F. Kane may pursue a claim under this procedure without disturbing his right to a monthly fee under paragraph I.B. Once the compensation fund is depleted, however, he cannot pursue a remedy without forfeiting his monthly fee.

V. Effective Date

As noted above, this section transforms the model agreement into a unilateral contract and solves the problem of consideration. Paragraph A. also states that the agreement is not ef-

fective unless the site is approved. Paragraph B. is designed to protect the site owner in the same manner as the comparable paragraph in the public compensation agreement. In addition, this paragraph diminishes the ambiguity of the word "cooperated" in paragraph A. A court would normally interpret "cooperate" to mean "reasonably cooperate" if the issue were raised before it. However, Paragraph B. allows Waste Management, Inc. to terminate the agreement if it believes that the quality of the cooperation it is receiving is inadequate. Paragraph B. also allows John F. Kane to terminate the agreement if it believes that the cooperation being demanded is too burdensome. The practical impact of Paragraph B., if neither party terminates the agreement, is that this fact alone is strong evidence that the cooperation given was "reasonable."

Model Compensation Agreement

Between

Waste Management, Inc.
101 Main Street
Riverdale, U.S.A.

and

John F. Kane
1 Rosebud Lane
Riverdale, U.S.A.

WHEREAS Waste Management, Inc. plans to build a hazardous waste management facility (HWMF) on a site which it owns, located at _____ adjacent to property located at _____ which is owned by John F. Kane (the "abutting site").

WHEREAS the construction and operation of the said HWMF will result in increased traffic on Rosebud Lane in front of the abutting site; and

WHEREAS the construction and operation of the said HWMF may result in odors, noise and/or air pollution and thereby cause damage to John F. Kane and to the abutting site; and

WHEREAS the construction and operation of the said HWMF may result in adverse impacts on the beauty and quality of the environment of Riverdale and thereby lower the property value of the abutting site; and

WHEREAS the construction and operation of the said HWMF may result in ground and/or surface water pollution and thereby cause damage to the well water presently used to supply the abutting site; and

WHEREAS the construction and operation of the HWMF will result in the need for ground and surface water monitoring on the abutting site; and

WHEREAS the construction and operation of the HWMF may increase the risk of other damages to John F. Kane and/or to the abutting site; and

WHEREAS Waste Management, Inc. has agreed to undertake the mitigation measures specified in this agreement; and

WHEREAS Waste Management, Inc. has agreed to compensate John F. Kane for such costs as are specified in this agreement;

The parties have agreed as follows:

I. Cash Compensation and Fees

A. Waste Management, Inc. shall pay John F. Kane, upon approval of the site by the State Facility Siting Board, the amount of \$ _____, as compensation for the annoyance, noise, odor and other temporary impacts on the abutting site from construction of the HWMF.

B. Waste Management, Inc. shall also pay John F. Kane the following additional amounts for so long as John F. Kane refrains from bringing suit for any property damage to the abutting site arising out of the operation of the HWMF:

(1) During the two years commencing on the first date of operation of the HWMF, a fee of \$ _____ per month.

(2) Thereafter, a fee as mutually agreed by the parties from time to time; provided that, if the parties are mutually unable to agree on a fee at any time, the fee shall be set at \$ _____ per month.

II. Provision of Services and Other Compensation

A. Waste Management, Inc. shall provide, without charge, disposal services for up to _____ kilograms per month of hazardous wastes, as defined by the Resource Conservation and Recovery Act, 42 U.S.C. §6903(5), generated by John F. Kane.

B. Waste Management, Inc. shall purchase from John F. Kane for \$ _____, a buffer strip designated as lot A on the plan attached as Appendix I to this agreement and shall plant thereon a hedge, acceptable to John F. Kane, and sufficient to form a visual screen between the HWMF and the abutting site.

C. Waste Management, Inc. shall reimburse John F. Kane for the purchase and installation of ground and surface water monitoring devices, as specified in Appendix II to this agreement, and shall further reimburse John F. Kane for monitoring services and maintenance of the said devices in an amount not to exceed \$ _____ per year.

III. Conditions of Construction and Operation

A. No wastes will be stored or disposed of on the HWMF at locations less than _____ yards from the abutting site or _____ yards from Rosebud Lane.

B. Waste Management, Inc. shall institute the practices specified in Appendix III to this agreement for the prevention of hazardous waste spills at the HWMF.

IV. Compensation for Damages

A. Waste Management, Inc. shall establish a fund of \$ _____ which will be used to mitigate any effects of the HWMF on individual residents of Riverdale, with whom Waste Management, Inc. enters into agreements substantially similar to this agreement, and to compensate such residents for those decreases in property values which result directly from construction and/or operation of the HWMF.

B. Claims for mitigating measures and/or compensation by John F. Kane shall be decided by an assessment board of three people who shall be appointed in the manner specified in paragraph C below.

C. The assessment board shall be appointed as follows:

(1) Within fifteen (15) days of submission of a claim to Waste Management, Inc. each party to this agreement shall appoint one member of the board.

(2) The third member, who shall act as chairperson, shall be chosen by the two members appointed by the parties, and failing agreement between them, by _____.

D. After affording John F. Kane and a representative of Waste Management, Inc. the opportunity to be heard on the claim, the assessment board shall determine John F. Kane's entitlement to compensation and/or mitigating measures. The board may attach whatever conditions it deems appropriate to the award of such compensation and/or mitigating measures.

E. The liability of Waste Management, Inc. under this agreement for all claims submitted by John F. Kane shall be limited to the sum of the fund established under paragraph A; provided that this fund shall in no way restrict the legal liability of Waste Management, Inc. for claims not submitted to the assessment board, or for claims that cannot be met due to depletion of the fund.

V. Effective Dates

A. This agreement shall become effective and binding on the parties when the application of Waste Management, Inc. for approval of the site is approved by the State Facility Siting Board if John F. Kane shall have cooperated with Waste Management, Inc. in any hearings before the said Board.

B. This agreement may be terminated by either party if both of the following conditions are met:

(1) Written notice of the termination, together with a request for a stay of the proceedings on the application of Waste Management, Inc. for approval of the site by the State Facility Siting Board is received by the Board prior to its ruling on the application.

(2) Written notice of the termination is delivered by hand to the other party at the office address provided in the heading of this agreement, above.

APPENDIX F: POTENTIAL FOR UNEXPECTED STATE LIABILITY

The decision of a State to provide compensation or an incentive to facilitate the siting of a hazardous waste management facility (HWMF) will not normally¹² subject the state to liability for damages if that decision proves to have untoward consequences for the community or neighboring property owners. This conclusion is not altered even when the state has been negligent in deciding to provide the incentive or compensation.

Of course, a State may voluntarily take on responsibility for the HWMF, by contractually guaranteeing its safety. In such a circumstance, the State may be held liable according to the terms of its contract. Such liability, however, is not "unexpected" and can readily be avoided simply by refraining to enter into any agreements containing such guarantees.

The more difficult issue for State agencies is whether the mere fact of providing incentives or compensation can give rise to tort or similar forms of liability for State negligence or violation of federally protected rights. Such liability is generally precluded under principles of law that provide immunity from tort liability for certain governmental acts.

One rationale for sovereign immunity is that nearly every act of government has adverse impacts on some individuals. Such impacts cannot be the basis for tort liability, however, if government is to function. As U.S. Supreme Court Justice Jackson once observed, "It is not a tort for government to govern."¹³

However, sovereign immunity means more than that governments are not liable for every adverse impact of their actions. Where sovereign immunity applies, governments will not be held liable for any adverse inputs of their actions, even if those actions were negligent and the impacts were directly caused by them.

Until 1957, sovereign immunity shielded every state from tort liability for every governmental activity. In that year, Florida became the first state to abolish sovereign immunity in some contexts.¹⁴ At least 26 states have now abolished or modified the immunity rule.¹⁵ Nevertheless, most jurisdictions have retained immunity in some contexts so as to avoid the spectre of one branch of government reviewing the reasonableness of a co-equal branch. The California Supreme Court has explained:

"(There must be) an assurance of judicial abstention in areas in which the responsibility for basic policy decisions has been committed to coordinate branches of government. Any wider judicial review, we believe, would place the court in the unseemly position of determining the propriety of decisions expressly entrusted to a coordinate branch of government."¹⁶

In order to assure that courts will not review the reasonableness of "basic policy decisions," most jurisdictions have

adopted a "discretionary function" rule of immunity. Under that rule a state is immune from liability for its acts if the act involves high level policy decisions which have been entrusted to the executive branch of government, and are thus inappropriate for judicial review.

The discretionary function rule originated with the Federal Tort Claims Act of 1946, which abolished federal sovereign immunity and allowed tort claims to be brought against the United States government for the first time. The Act, however, retained immunity for:

"(a)ny claim...based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or¹⁷not the discretion involved is abused."

Several states have enacted legislation patterned after the Federal act.¹⁸ Even where State statutes are totally different, however, the courts have essentially carved out the same area of governmental discretion to which immunity applies. For example, the New York Court of Appeals has interpreted that state's tort claims act, which contains no express immunity whatever, as retaining immunity for discretionary actions. As the court explained:

"To accept a jury's verdict as to the reasonableness and safety of a plan of governmental body which originally considered and passed on the matter would be to obstruct normal governmental operations and to place in inexperienced hands what the Legislature has seen fit to entrust to experts."¹⁹

The decision to provide compensation or incentives to a community to facilitate the siting of a HWMF clearly appears to

be just the sort of discretionary activity that tort immunity rules were designed to protect. Such a decision appears to involve the judgment of state officials entrusted with power to make the decision. Nevertheless, this conclusion cannot be reached automatically. Even "ministerial" actions - the term used to describe acts which are not discretionary and for which there is consequently no immunity - may involve some degree of judgment.

Ministerial actions are sometimes contrasted with discretionary acts on the basis that they involve execution rather than formulation of policy.²⁰ Using such a distinction, a decision to provide compensation or incentives in all cases that meet certain criteria would be discretionary, while a decision as to whether a particular objective criterion had been met would be ministerial. Theoretically, then, a decision to provide compensation or incentives might turn on a purely ministerial application of policy, and thus might be the subject of a tort suit.²¹ In practice, however, the decision to provide compensation or incentives will not be based on such objective criteria, but rather on policy determinations concerning such factors as the urgency of the need for additional facilities. These determinations are more clearly matters of discretion.

The issue of immunity is somewhat different if the allegation is that the decision to provide compensation or incentives has interfered with a right secured by federal law. Such an allegation may conceivably be made under Federal civil rights statutes,²²

using the Resource Conservation and Recovery Act (RCRA) as the source of the Federal right. However, while the civil rights statutes have been applied to allow money damages to be assessed against other levels of government, States are granted absolute immunity by the eleventh amendment from suits for damages in federal court.²³ While this immunity has not been extended to actions for equitable relief such as injunctions, this fact will be of little use to a litigant whose sole basis for relief is a decision to provide incentives or compensation since the decision and its implementation would likely be complete at the time the action is brought.

Thus, it may be concluded that the decision to provide incentives or compensation to a community to induce or facilitate its acceptance of a HWMF will not open the State to unexpected liability. Unless the State expressly binds itself to guarantee the safety of such a facility, it will be immune from suit for even a negligently made decision to provide such compensation or incentives.

APPENDIX G: PRESENT VALUE OF \$1 DUE IN n PERIODS AT i INTEREST PER PERIOD

n	Rate of interest, %										Rate of interest, %			
	.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	15.0	20.0	25.0
1	.9950	.9901	.9852	.9804	.9756	.9709	.9615	.9524	.9434	.9259	.9091	.8696	.8333	.8000
2	.9901	.9803	.9707	.9612	.9518	.9426	.9246	.9070	.8900	.8573	.8264	.7561	.6944	.6400
3	.9851	.9706	.9563	.9423	.9286	.9151	.8890	.8638	.8396	.7938	.7513	.6575	.5787	.5120
4	.9802	.9610	.9422	.9238	.9060	.8885	.8548	.8227	.7921	.7350	.6830	.5718	.4823	.4096
5	.9754	.9515	.9283	.9057	.8839	.8626	.8219	.7835	.7473	.6806	.6209	.4972	.4019	.3277
6	.9705	.9420	.9145	.8880	.8623	.8375	.7903	.7462	.7050	.6302	.5645	.4323	.3349	.2621
7	.9657	.9327	.9010	.8706	.8413	.8131	.7599	.7107	.6651	.5835	.5132	.3759	.2791	.2097
8	.9609	.9235	.8877	.8535	.8207	.7894	.7307	.6768	.6274	.5403	.4665	.3269	.2326	.1678
9	.9561	.9143	.8746	.8368	.8007	.7664	.7026	.6446	.5919	.5002	.4241	.2843	.1938	.1342
10	.9513	.9053	.8617	.8203	.7812	.7441	.6756	.6139	.5584	.4632	.3855	.2472	.1615	.1074
11	.9466	.8963	.8489	.8043	.7621	.7224	.6496	.5847	.5268	.4289	.3505	.2149	.1346	.0859
12	.9419	.8874	.8364	.7885	.7436	.7014	.6246	.5568	.4970	.3971	.3186	.1869	.1122	.0687
13	.9372	.8787	.8240	.7730	.7254	.6810	.6006	.5303	.4688	.3677	.2897	.1625	.0935	.0550
14	.9326	.8700	.8118	.7579	.7077	.6611	.5775	.5051	.4423	.3405	.2633	.1413	.0779	.0440
15	.9279	.8613	.7999	.7430	.6905	.6419	.5553	.4810	.4173	.3152	.2394	.1229	.0649	.0352
16	.9233	.8528	.7880	.7284	.6736	.6232	.5339	.4581	.3936	.2919	.2176	.1069	.0541	.0281
17	.9187	.8444	.7764	.7142	.6572	.6050	.5134	.4363	.3714	.2703	.1978	.0929	.0451	.0225
18	.9141	.8360	.7649	.7002	.6412	.5874	.4936	.4155	.3503	.2502	.1799	.0808	.0376	.0180
19	.9096	.8277	.7536	.6864	.6255	.5703	.4746	.3957	.3305	.2317	.1635	.0703	.0313	.0144
20	.9051	.8195	.7425	.6730	.6103	.5537	.4564	.3769	.3118	.2145	.1486	.0611	.0261	.0115
21	.9006	.8114	.7315	.6598	.5954	.5375	.4388	.3589	.2942	.1987	.1351	.0531	.0217	.0092
22	.8961	.8034	.7207	.6468	.5809	.5219	.4220	.3418	.2775	.1839	.1228	.0462	.0181	.0074
23	.8916	.7954	.7100	.6342	.5667	.5067	.4057	.3256	.2618	.1703	.1117	.0402	.0151	.0059
24	.8872	.7876	.6995	.6217	.5529	.4919	.3901	.3101	.2470	.1577	.1015	.0349	.0126	.0047
25	.8828	.7798	.6892	.6095	.5394	.4776	.3751	.2953	.2330	.1460	.0923	.0304	.0105	.0038
26	.8784	.7720	.6790	.5976	.5262	.4637	.3607	.2812	.2198	.1352	.0839	.0264	.0087	.0030
27	.8740	.7644	.6690	.5859	.5134	.4502	.3468	.2678	.2074	.1252	.0763	.0230	.0073	.0024
28	.8697	.7568	.6591	.5744	.5009	.4371	.3335	.2551	.1956	.1159	.0693	.0200	.0061	.0019
29	.8653	.7493	.6494	.5631	.4887	.4243	.3207	.2429	.1846	.1073	.0630	.0174	.0051	.0015
30	.8610	.7419	.6398	.5521	.4767	.4120	.3083	.2314	.1741	.0994	.0573	.0151	.0042	.0012
35	.8398	.7059	.5939	.5000	.4214	.3554	.2534	.1813	.1301	.0676	.0356	.0075	.0017	.0004
40	.8191	.6717	.5513	.4529	.3724	.3066	.2083	.1420	.0972	.0400	.0221	.0037	.0007	.0001
45	.7990	.6391	.5117	.4102	.3292	.2644	.1712	.1113	.0727	.0313	.0137	.0019	.0003	.0000
50	.7793	.6080	.4750	.3715	.2909	.2281	.1407	.0872	.0543	.0213	.0085	.0009	.0001	.0000

Appendix Footnotes

1. See Freilich & Quinn, "Effectiveness of Flexible and Conditional Zoning Techniques--What They Can and What They Can Not Do for Our Cities," 1979 Proceedings of the Institute on Planning, Zoning and Eminent Domain 167, 193 (Southwestern Legal Foundation)
2. In the unusual circumstances where no such discretion exists, however, a permit must be issued whenever the statutory criteria are met, and no additional conditions can be imposed. Statutes that confer authority on a particular board to issue HWMF permits, however, appear always to vest some discretion in the board.
3. See, e.g., Bringle v. Board of Supervisors, 54 Cal. 2d 86, 351 P.2d 765 (1960) (zoning variance),
4. See, Pioneer Trust Savings Bank v. Village of Mt. Prospect, 22 Ill. 2d 373, 176 N.E.2d 799 (1961).
5. For example, some courts have been reluctant to approve mandatory dedications for schools. Id.
6. Maryland v. Environmental Protection Agency, 530 F.2d 215, 225 (4th Cir. 1975), vacated and remanded, per curiam, on other grounds, sub nom. Environmental Protection Agency v. Brown, 431 U.S. 99 (1977).
7. Linde & Bunn, Administrative Law 832 (1976)
8. Perkins v. Lukens Steel Co., 310 U.S. 113, 127 (1940)
9. Kretzmer, "Binding Communities to Compensation Agreements for Facilities" Document No. 16, Energy Impacts Project, Laboratory of Architecture and Planning, Massachusetts Institute of Technology, Report to the U.S. Department of Energy (1979)
10. Research revealed no instance where the validity of a public expenditure was challenged on the basis that the bargained-for promise was illusory. Exhaustive research, however, was not undertaken.
11. Courts sometimes state that decisions of this type are entitled to a presumption of validity. See, e.g., Caleb Pierce, Inc. v Commonwealth, 453 Mass. 306, 237 N.E. 2d 63 (1968).

12. This issue discussion does not address peculiar provisions of state law that might conceivably alter its conclusions in certain circumstances in a single jurisdiction. While no such provisions were identified in the course of research, an exhaustive search was not undertaken.
13. Dalehite v. United States, 346 U.S. 15,57 (dissenting) (1953).
14. Hargrove v. Town of Coca Beach, 96 So.2d 130 (Fla. 1957).
15. See cases collected in Comment, "The Discretionary Exception to Government Tort Liability," 61 Marquette L. Rev. 163, n.2 (1977)
16. Johnson v. State, 69 Cal.2d 782, 248 P.2d 352 (1968) (emphasis in original).
17. 28 U.S.C. p2608 (a).
18. See, e.g., Alaska Stat. p9.50.250(1); Cal. Gov't Code p820.02; Iowa Code Ann. p25A.14.1; Minn. Stat. Ann. p466.03(6).
19. Weiss v. Fote, 7 N.Y.2d 579, 167 N.E.2d 63 (1960).
20. See, e.g., Elgin v. District of Columbia, 337 F.2d 152, 155 (D.C.Cir. 1964).
21. The problems of proof in such a suit would be astronomical, however. At a minimum, it would be necessary to prove that the decision to provide compensation or incentives was the proximate cause of the harm alleged. If there was any intervening superceding cause such as negligent design or operation of the facility the causal link would be broken and the suit would fail.
22. 42 U.S.C. p1983.
23. See Skehan v. Board of Trustees, 538 F.2d 53, cert. denied, 429 U.S. 979 (1979).