

**US Army Corps
of Engineers®**
Buffalo District

FUSRAP

Technical Memorandum

Seaway Site; Institutional Controls

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ACRONYMS AND ABBREVIATIONS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
FUSRAP	Formerly Utilized Sites Remedial Action Program
IC	Institutional Control(s)
LUC's	Land Use Controls
MED	Manhattan Engineering District
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

Technical Memorandum Seaway Site; Institutional Controls

BACKGROUND

The Seaway Site, which is approximately 89 acres, has been used as a municipal landfill for approximately 60 years with disposal activities ceasing in 1993.¹ Closure activities began in 1990 with construction of a low permeability landfill cap consisting of 24 inches of low-permeability clay covered by six inches of topsoil. The cap currently covers about 75% of the Seaway Site but excludes the FUSRAP Site, i.e., Areas A, B and C. Other features are a leachate collection system and clay cutoff wall enclosing the entire 89-acre Seaway Site including the FUSRAP Site.² Figure 1 shows the entire Seaway Site including Areas A, B and C.

The United States Army Corps of Engineers (USACE) is evaluating alternatives for remediating approximately 6,000 cu. yd.(s) of Manhattan Engineer District (MED) material, containing low levels of residual radioactivity, disposed in at the Seaway Site in 1974. The disposal occurred over the 12-acre FUSRAP Site, i.e., Areas A, B and C. Landfill material and refuse to a depth of 40 feet cover Areas B and C. Area A is covered with 0 to 10 feet of landfill material and refuse.

Two of the remedial alternatives being evaluated by USACE are containment, alternative 6, and partial excavation with off-site disposal, alternative 4. Implementation of these alternatives require leaving some or all of the MED material on site and mitigating radiation exposures through the placement of soil (containment cover) over the soil contaminated above the FUSRAP Site guidelines. Both alternatives require imposition of institutional controls (IC's) to accomplish the remediation goals of isolating the material from the public and environment.

PURPOSE

This memorandum evaluates the types of IC's needed to accomplish these goals. In order to be effective the IC's must be maintained for 1000 years and accomplish the following objectives:

1. No disturbance/penetration of the proposed containment cover over Areas A, B, and C.
2. Maintain the existing landfill cap over the remaining 67 acres of the Seaway Site in order to preclude overloading the leachate collection system resulting in the potential subsequent failure of the containment cover and/or release of leachate to the environment.
3. Maintain, in an operational condition, the existing leachate collection system for a 1,000 years to preclude buildup of leachate inside the landfill resulting in release of MED material. Such an occurrence may result in a direct release of the material to the environment because of leachate leaking and/or a breach of the containment cover caused by erosion resulting from leaking of the leachate.
4. Prevent land use inconsistent with the remedy, for example, residential use.

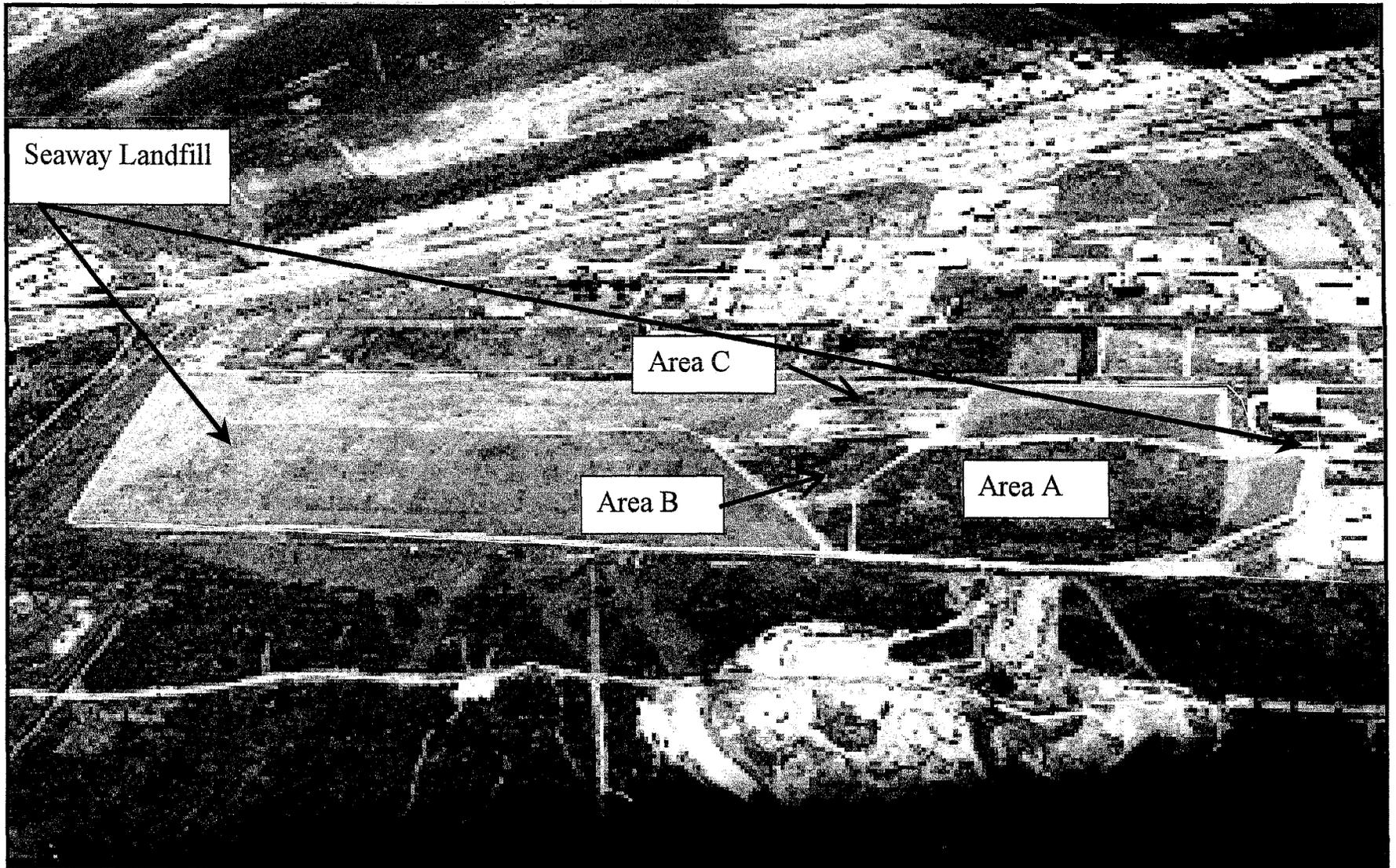


Figure 1 – Seaway Site (89 acres) and FUSRAP Site, Area A, B, and C (12 acres)

5. Allow placing of safety controls to preclude contact with the MED material during leachate collection system repairs involving removing portions of the cap or containment cover to gain access to the leachate collection system.

These objectives require establishing IC's sufficient to provide the federal government control of land use over the entire Seaway Site.³

DISCUSSION OF ALTERNATIVES

The containment alternative requires grading and consolidation of MED material and covering Areas A, B, and C with a landfill cover at least 4 to 5½ feet thick. Material outside of the leachate collection system will be excavated and shipped off-site for disposal.

The partial excavation with off-site disposal alternative involves removal and off-site disposal of accessible MED contaminated soil exceeding USACE's proposed cleanup levels from Areas A and C. Accessible soil is defined as soil not commingled with landfill refuse. Following excavation and grading, Areas A, B, and C will be covered with a landfill cover at least 4 to 5½ feet thick. The total disposal volume for this alternative is estimated at 72,000 yds. of MED contaminated soil.

Under either alternative, cost and engineering concerns prevent the FUSRAP Site from being segregated from the remaining portions of the existing capped Seaway Site and its associated leachate collection system. A separate collection system for the FUSRAP Site, isolated from the rest of the landfill, is economically infeasible. Installation of a separate leachate collection system involves isolating this system from the existing collection system to prevent leachate, generated from other portions of the landfill, from entering and possibly overloading the collection system. This requires construction of a slurry wall between Areas A, B and C and the other areas of the landfill. Such construction involves excavation and removal of refuse from the bottom of the landfill to the top of the closed cap. This is not only difficult and expensive, but the effectiveness of such a slurry wall for hundreds of years is questionable. Also, the installation of an isolated leachate collection system can involve excavating material in Areas A, B and C to install collection piping and other features. Finally, a failure in the existing landfill system will negatively impact any isolated future system placed around Areas A, B and C.⁴ Figure 2 shows details of the existing leachate collection system.

INSTITUTIONAL CONTROLS

General Discussion

Both alternatives depend on maintaining the containment cover and isolating the MED material from the public and environment. To accomplish these remediation goals, land use controls (LUC's) including institutional controls must be imposed. "LUC's include any type of physical, legal or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health and the environment."⁵ The referenced memorandum states "IC's are a subset of LUC's and are primarily legal mechanisms...". Administrative controls, such as zoning, building restrictions, etc. are treated as a separate category of LUC's.⁵

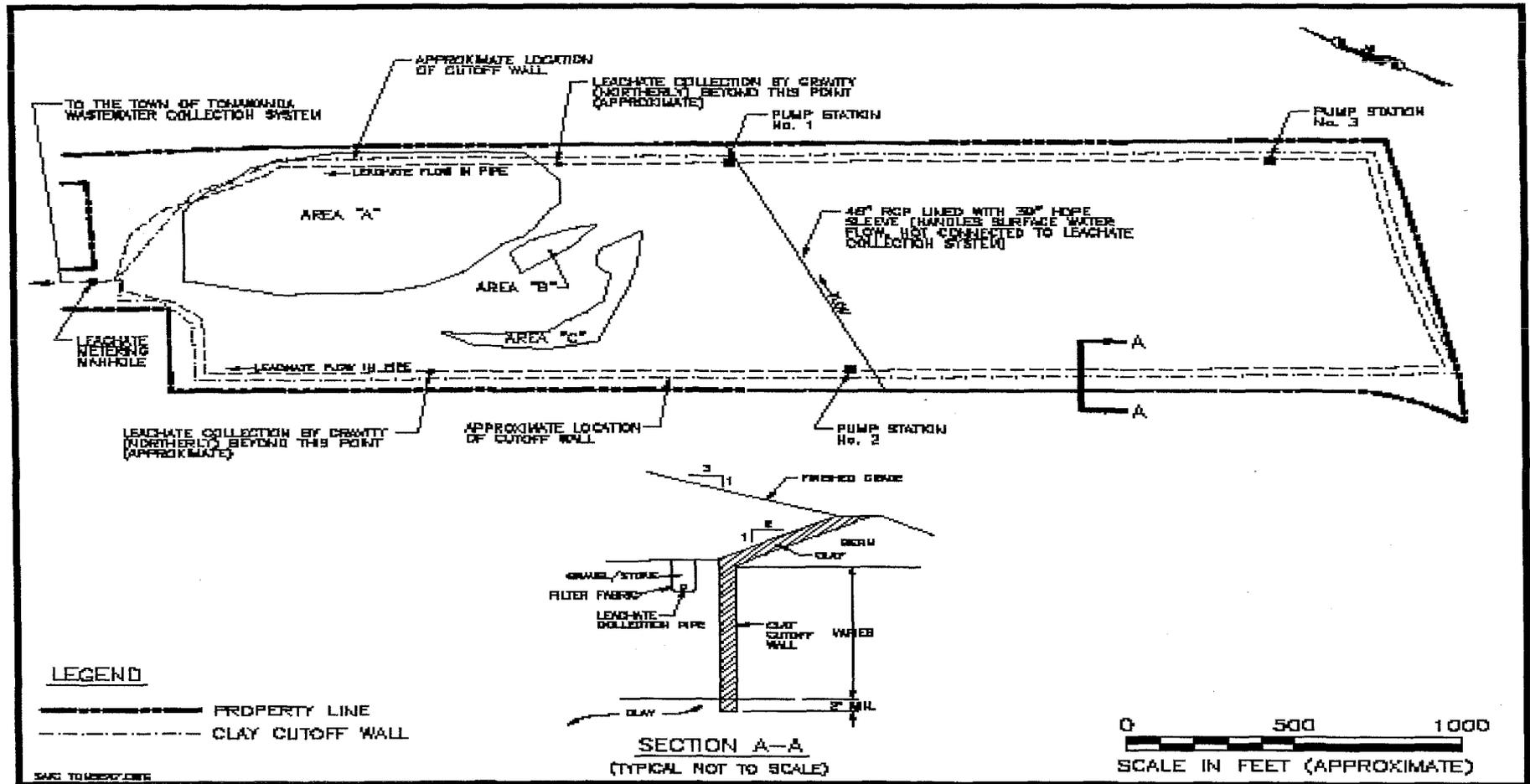


Figure 2 – Seaway Site Leachate Collection System Details

The discussion of institutional controls at the Seaway Site, however, will include both administrative and legal mechanisms. The physical mechanisms are excluded, since these “encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to property, such as fences or signs.” (Emphasis added)⁵

In discussing institutional controls, the more inclusive definition of IC’s employed by the USEPA and DOE will be used. They define institutional controls as “non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contaminants by limiting land and resource use.”⁶ To be effective, institutional controls need to be “layered... to provide overlapping assurances of protection from contamination.”⁶ The Department of Defense provides similar guidance on layering of controls.⁷

Evaluation Criteria

As with any other remedy component, determining the types of institutional controls needed to accomplish the objectives of the containment and partial excavation alternatives require consideration of CERCLA’s nine criteria for evaluation.⁸ The criteria of protective of human health and environment, compliance with ARAR’s, and reduction in toxicity will not be discussed, since these are threshold criteria not directly relating to institutional controls. Likewise, short-term effectiveness will not be addressed, since the alternatives being considered do not require use of short-term institutional controls.

Four of the five remaining criteria, i.e., long-term effectiveness, implementability, State acceptance, and local government and community acceptance will be discussed in some detail in determining what institutional controls are needed. The final criterion of cost will be only briefly discussed, since much of the needed data has not been developed.

Layering

To be effective IC’s must be layered to ensure long-term maintenance of the remedy. The National Research Council notes “many weaknesses in institutional controls...stem from inherent institutional fallibilities”. It recommends defense in depth which “refers to layering by using more than one measure to accomplish basically the same purpose, and redundancy by having more than one organization responsible for basically the same tasks.”⁹ For example, although a zoning use consistent with the remedy might be changed to an inconsistent use, the layering of a proprietary IC, such as a negative easement in gross or a deed covenant, prevents land use inconsistent with the remedy. Likewise, inconsistent land use might be prevented when a potential purchaser discovers, during a routine environmental audit, the Site appears on various lists of contaminated properties maintained by the federal, State and local governments. Such a discovering will force the purchaser to engage in further due diligence to determine if use of the Site is restricted. These lists are an example of an informational devices institutional control.

Types of Institutional Controls

The four types of institutional controls are enforcement and permit tools with IC components, governmental controls, proprietary controls, and informational devices. State and Federal agencies use enforcement or permitting tools to restrict land use. The USEPA has a variety of enforcement tools such as administration orders of consent and unilateral administrative orders.⁶ An example of similar State controls is the permitting requirements and regulations imposed by the State of New York on the Seaway Site. Examples of governmental controls are zoning, planned use development, and master plans. Proprietary controls are based upon real property law and create legal property interests. Examples are easements and deed covenants. Informational devices provide information or notification that residual or capped contamination may remain on site. Common examples include state registries, deed notices, and advisories.

Enforcement and Permit Tools with IC components

For the proposed remedy to be protective of human health and environment, the MED material must be isolated from the environment for 1,000 years. This requires long-term monitoring and maintenance of the engineered mechanisms. When "IC's must be effective for a long period, either proprietary or governmental controls should be considered, because they generally run with the land and are enforceable."⁶

Enforcement and permits tools, also, are effective at the Seaway Site, since the State of New York's regulatory scheme for solid waste management facilities requires conveyance of a real property interest, i.e., a deed covenant, to prevent disturbing "the integrity of the final cover, liner, or any other components of the containment system, or the function of the monitoring or environmental control systems..."¹⁰ The deed covenant will exist in perpetuity. Consequently, it survives conveyance of the Site.

As a solid waste management facility, the Seaway Site is subject to the rules and regulations for such facilities. 6 NYCRR Part 360. These regulations include the criteria for a facility's post-closure operation and maintenance. The post-closure period is specified as a minimum of 30 years after facility closure. Environmental and facility monitoring plus facility maintenance and operation must continue, as determined by the State, during the post-closure period for as long as the leachate is a threat to human health or the environment. Proper closure requires ensuring that future land uses will neither disturb the integrity of the final cover, liners, or any other components of the containment system nor the functioning of the monitoring or environmental control systems.

Two of the important tools to accomplish these goals are the requirement for a deed covenant and deed notice.¹⁰ The State of New York is expected to implement these regulations at the Seaway Site. It is further recommended the deed notice include information identifying the Seaway Site as including or adjacent to the FUSRAP Site.

The State's enforcement and permit tools, however, are lacking in long-term effectiveness due to problems with implementability and acceptance by the State, local governments, and community. The federal government must rely on the State to enforce these controls, since they depend on

State regulations. The State, however, questions its ability to impose its regulations on MED material, maintaining its solid waste management facility regulations are inapplicable to the material, because it is a low level radiological waste.¹¹

The State and local governments, also, currently oppose either the containment or partial excavation alternatives.¹¹ This makes it unlikely the federal, State, and local governments can enter into a contractual relationship providing the federal government the necessary enforcement powers to implement these existing enforcement and permit tools institutional controls.

Governmental Controls

Existing governmental controls are consistent with the containment and partial containment alternatives. The current zoning designation of industrial allows Site uses in harmony with those identified in the alternatives. In addition, the master plan anticipates future uses compatible with the Site's past use as a municipal landfill. The State of New York, also, lists the Site as a class 4 hazardous waste site which imposes restrictions on the Site consistent with the alternatives.

The current governmental controls, however, do need to be modified to clearly identify the Seaway Site as containing MED material. The zoning designation must clearly restrict uses inconsistent with the Site's past use as a solid waste management facility and FUSRAP Site. Likewise, the master plan needs to identify the entire Seaway Site as a contaminated property with significant use restrictions. If possible from an implementability standpoint, additional controls, such as building restrictions, can be imposed to further guarantee Site uses consistent with the containment alternatives and its past use as a solid waste management facility. The State of New York, also, needs to reevaluate its classification of the Site as a class 4 hazardous waste site given the existence of the MED material.

Although continuation and possible enhancement of existing governmental controls can be expected, these controls are lacking in long-term effectiveness due to problems with implementability and acceptance by the State, local governments, and community. The federal government must rely on the local governments and State to enforce these controls, since they are dependent on State and local regulations and actions. The State and local governments, however, currently oppose either the containment or partial excavation alternatives, maintaining "[i]t is the State's position that the responsibility for creating and maintaining institutional controls ... lies with the Federal Government..."¹¹ This makes it unlikely the federal, State, and local governments can enter into a contractual relationship providing the federal government the necessary enforcement powers to implement these existing governmental institutional controls.

Proprietary Controls

Given the problems with the long-term effectiveness of governmental controls and enforcement and permit tools with IC components, the Corps must determine how similar LUC's can be obtained. Both alternatives require the federal government having the ability to prevent either destruction or deterioration of the engineered caps plus maintain existing and proposed-engineered mechanisms for a thousand years.³ Since the Corps of Engineers does not regulate the MED material or solid waste landfills, it can not rely on an existing federal regulatory

scheme to impose enforcement and permit tools type of institutional controls.¹² The Corps, also, has no authority to impose governmental controls such as zoning or building restrictions. Long-term proprietary controls are the only other type of institutional controls capable of achieving such goals.⁶ To obtain such controls, the Corps will need to acquire a real property interest in the Seaway Site.

Acquisition of a real property interest meets the important criteria of long-term effectiveness and implementability. The State of New York has indicated its acceptance of the United States acquiring a real property interest on the Seaway Site, if the containment or partial excavation alternatives are selected. Local acceptance is unknown, since easement acquisition has not been discussed with the local governments.

The necessary real property interest can be either total ownership of the Site, i.e., a fee absolute estate, or a negative easement in gross. Examples of such easements are the conservation easements used by the U.S. Fish and Wildlife Service to manage its migratory bird program.¹³ The Corps of Engineers, also, uses two standard negative easements, i.e., a restrictive easement for a restricted safety area and a restrictive dune easement.¹⁴ Any easement acquired will need to provide access to the site for operation and maintenance. X

Either interest will impose proprietary institutional controls on the Seaway Site sufficient to meet the goals of the containment alternatives. Both are perpetual real property interests lasting the required 1000-year time frame. And they allow placing clauses in the conveyance documents providing notice to future owners of the existence of MED material and other Site contaminants.

The authority to acquire a real property interest for implementation of the FUSRAP ~~program~~ appears to be broad enough to allow acquisition of either a fee estate or an easement. In fact, the authorizing language essentially duplicates the language used by the Fish and Wildlife Service to acquire conservation easements.¹⁵

As previously stated, acquisition of the Seaway Site by a fee absolute estate provides total ownership. This allows the most control, since the federal government totally controls the Site's future use. Even if the Site is later conveyed to a non-federal entity, covenants can be placed in the deed providing sufficient federal control over the Site to manage future land use. Deed covenants are enforceable by the federal government.

Fee ownership of the Seaway Site, however, has a number of negatives. Acquisition of a fee estate may be costly. It will expose the federal government to additional liability, e.g., possible financial liability to licensees, business invitees and trespassers injured on the property. The federal government may become subject to State regulations as the owner of a solid waste management facility. In addition, under CERCLA the owner of land becomes liable for all environmental contaminants regardless of whether the owner causes their release.¹⁶

Acquisition of a negative easement, likewise, has a number of disadvantages. An easement does not provide total control over the Seaway Site, since an easement is not a possessory interest but only restricts the owner's use of the land.¹⁷ Thus, the easement must be carefully drafted to

restrict all uses inconsistent with the proposed remedy. Also, the current owner of the Site may not want to convey an easement, since after conveyance he still owns the Site but may not be able to utilize it for productive purposes.

Acquiring a negative easement, however, does have a number of advantages. It might be less costly than a fee estate. The federal government may not be considered an owner for purposes of either CERCLA liability or the State's solid waste regulations. The other liabilities of ownership do not attach.

It is recommended the proprietary institutional control be a negative easement in gross acquired by the United States.¹⁸ Such an acquisition meets the important criterion of long-term effectiveness, since the easement will exist in perpetuity and survive a conveyance of the Site, i.e., run with the land. It can also be implemented under current federal authority for the FUSRAP program. Although both the State and local governments oppose either alternative, they have stated in meetings and communications that they expect principal responsibility for enforcing institutional controls will be with the federal government. Acquisition of a real property interest by the federal government fulfills this demand.

Informational Devices

A number of informational devices already are in place on the Seaway Site. Both the State of New York and the United States list Seaway as a contaminated site. It is on the State's Priority List of contaminated sites. It is found on the federal CERCLIS (Comprehensive Environmental Response, Compensation and Liability Act Information System), AIRS (Aerometric Information Reporting System), TRIS (Toxic Chemical Release Inventory), and FINDS (Facility Index System) lists. Both the DOE and the Corps list the Site as a FUSRAP site on the Internet.¹⁹

These lists, however, need to be modified, because they do not identify the Seaway Site as a FUSRAP site. It is recommended the lists be modified to so identify the Site. Such modifications will provide better notice of the nature of contaminants found at the Site. This information is already included on the CERCLIS and FINDS lists with regard to the Ashland II and Luckey, OH FUSRAP Sites.

As noted, both the DOE and Corps maintain a listing of FUSRAP sites on the Internet. It is recommended these lists be maintained in a permanent format. At a minimum these permanent lists must include the site address and the location of the administrative record. The permanent lists, also, need to use the same name for the Site. The DOE list identifies the Site as the Seaway Industrial Park and the Corps' identifies the Site as the Seaway FUSRAP Site.¹⁹

The recommended informational devices can be readily implemented and are expected to be acceptable to the State of New York and local governments. The major limitation of such devices is their lack of long-term effectiveness, since they provide no enforcement mechanisms. They do provide, however, a "secondary 'layer' to help ensure the overall reliability of other IC's" by giving notice to potential purchasers and the local community that the Site is contaminated and its use likely restricted.

Recommendations

The recommended institutional controls to be included as components of the containment and partial excavation alternatives for the Seaway Site are:

a. Proprietary controls – A permanent negative easement in gross acquired by the United States over the entire 89-acre Seaway Site. This recommendation meets the criteria of long-term effectiveness, since easements exist in perpetuity. It can be implemented, because the United States has the authority to acquire the easement. Although the State of New York and the local governments find both alternatives unacceptable, if such alternatives are chosen, they desire the United States to accept long-term responsibility for the Site. Acquisition of a permanent easement meets this desire.

b. Enforcement and permit tools –

(1) The State of New York currently has regulatory authority over the existing capped area of the Seaway Site. The State questions whether its regulatory authority extends to the FUSRAP Site because of the existence of MED material. It is recommended the State require the land owner to place a deed notice on the Site and convey a deed covenant to the State as mandated by its solid waste management facilities regulations.¹⁰ The notice and covenant need to reference the existence of the MED material in order to comply with the purpose of the regulations. At a minimum the legal description in the notice and covenant will be of the existing 67-acre capped area. The description also needs to include those portions of Areas A, B, and C contained within the existing leachate system, since this is part of the permitted area.

(2) This recommendation meets the criterion of long-term effectiveness, since these regulatory requirements apply to the current and future owners of the Site.⁶ The implementability and State and local acceptance are not expected to be problems, since the requirements apply to the existing capped landfill and not solely to Areas A, B, and C. The State may resist extending these controls to include these Areas.

c. Governmental controls – It is recommended the existing controls be maintained and enhanced as discussed in the section on governmental controls. This recommendation meets the criteria of long-term effectiveness, since governmental controls apply to the current and future owners of the Seaway Site. Local acceptance is not expected to be problems, since the controls are consistent with past use of the Seaway Site and apply equally to the existing capped landfill and Areas A, B, and C. Implementability by the federal government will be a problem, since it can not enforce these controls without the cooperation of the local governments. The local governments currently oppose either the containment or partial excavation alternative.

1. Even if the local governments supported the alternatives, they might resist implementing site specific building and use restrictions due to increased costs and liability. An agreement between the Corps and local governments may be necessary to effect these controls.

d. Informational devices – It is recommended the existing controls be maintained and enhanced as discussed in the section on informational devices. The recommendations can be easily implemented and are expected to be acceptable to the State of New York and local governments. The major limitation of such devices is their lack of long-term effectiveness, since they provide no enforcement mechanisms.

The overall cost to implement and enforce these recommended institutional controls is difficult to determine. The initial costs of all but the proprietary control will be nominal, mainly consisting of administrative costs. The estimated fair market value of the proposed negative easement has not been determined, but it is not expected to be a significant factor in remedy selection. However, the cost for long-term monitoring and enforcement of the institutional controls may be significant especially when the monitoring, operation, and maintenance of the other component of the LUC's, i.e., the physical mechanisms encompassing engineered remedies, are included.

In considering only institutional controls the USEPA guidance to site managers points out that:

[C]ost estimates for ICs might include legal fees associated with obtaining easements restricting land use, the costs of purchasing property rights (e.g., groundwater rights, easements), or the wages of the state and local government personnel that will regularly monitor the IC to ensure that it has not been violated. It is interesting to note that once the total lifecycle costs of implementing, monitoring and enforcing an IC – which may exceed 30 years – are fully calculated, it may actually be less costly... to implement a remedy that requires treatment of the waste.⁶

The recommended institutional controls meet the requirement of being components of a complete remedy without being substitutes for “active response measures” such as containment.²⁰ As remedy components they are included in the containment and partial excavation alternatives. These alternatives are evaluated using nine criteria for evaluation.⁸ The recommended institutional controls remain effective components of the alternatives when evaluated under these criteria. Additional analysis is needed, however, to evaluate the institutional controls component of the alternatives under the cost criterion, but this analysis is not expected to result in significant changes to the recommendation.

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17. USEPA, OSWER Directive 9355.0-49FS, "Presumptive Remedy for CERCLA Municipal Landfill Sites", September 1993.
18. USEPA, OSWER Directive 9355.0-69, PB97-963301, "Rules of Thumb for Superfund Remedy Selection", August 1997.

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- ¹ See "Addendum to the Feasibility", pp.7,8, dated June 23, 2000 for detailed history of the Seaway Site.
- ² Id. pp. 19-22.
- ³ Seaway Alternatives and IC's Discussions for DOE, 2/7/01; SAIC.
- ⁴ Response Matrix dated February 6, 2001 to comments to "DOE Discussion Paper Regarding Institutional Controls and Alternatives Evaluation for the Seaway Landfill Areas A, B, and C, Tonawanda, New York" version: January 29, 2001; SAIC.
- ⁵ Memorandum for Assistant Secretary of the Army (Installation and Environment), Assistant Secretary of the Navy (Installation and Environment), Assistant Secretary of the Air Force (Manpower, Reserve Affairs, Installation and the Environment), Director, Defense Logistics Agency (D); Subject: Policy on Land Use Controls Associated with Environmental Restoration Activities; dated 17 January 2001. (The memorandum excludes civil works projects, but draft guidance dated 21 March 2001 for FUSRAP Sites is essentially to same.)
- ⁶ Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups, OSWER 9355.0-74FS-P; EPA 540-F-00-005, September, 2000.
- ⁷ Memorandum CECC-C "Establishing Institutional Controls at Closing Military Installations", Department of the Army, U.S. Army Corps of Engineers, 31 March 1998.
- ⁸ 40 CFR 300.430(e)(9)(iii).
- ⁹ Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites, National Research Council (2000); (See, also, reference 3).
- ¹⁰ 6 NYCRR 360-1.2(a)(47); 360-2.15(k)(This section requires a deed covenant and notice); 360-7.6(d).
- ¹¹ August 31, 2000 letter from the New York State Department of Environmental Conservation, Division of Solid and Hazardous Materials.
- ¹² These types of controls may be available to other federal agencies such as USEPA and DOE. (See references 3 and 7)
- ¹³ Fish and Wildlife Service Manual, 342 FW 3, Conveyance of Easement, Ex. 3; <http://www.fws.gov/directives/manual.htm> .
- ¹⁴ ER 405-1-12, Chap. 5.
- ¹⁵ Energy and Water Development Appropriations Act, P.L. 106-60, Sec. 611(a) and 16 USC 715d and 3922.
- ¹⁶ 42 USC 9607
- ¹⁷ Restatement of the Law of Property, sec. 450, ALI (1944).
- ¹⁸ The format of the easement and easement estate will be determined after remedy selection.
- ¹⁹ <http://www.em.doe.gov/sitelist/index.html> and <http://www.lrb.usace.army.mil/> .
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