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**FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
TOWN OF BROOKHAVEN LANDFILL EXPANSION
Brookhaven, New York**

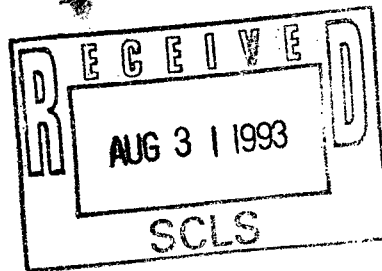
**Prepared For
TOWN OF BROOKHAVEN
Medford, New York**

August 1993

**Wehran-New York, Inc.
Middletown, New York**

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**FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
TOWN OF BROOKHAVEN LANDFILL EXPANSION
BROOKHAVEN, NEW YORK**

Prepared for

**TOWN OF BROOKHAVEN
3233 Route 112
Medford, New York 11763**

Prepared by

**WEHRAN-NEW YORK, INC.
666 East Main Street
Middletown, New York 10940**

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August 1993

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DOCUMENT

Final Environmental Impact Statement

PROJECT

Town of Brookhaven Landfill Expansion

LOCATION

Town of Brookhaven, Suffolk County, New York

LEAD AGENCY

Town of Brookhaven

CONTACT FOR FURTHER INFORMATION

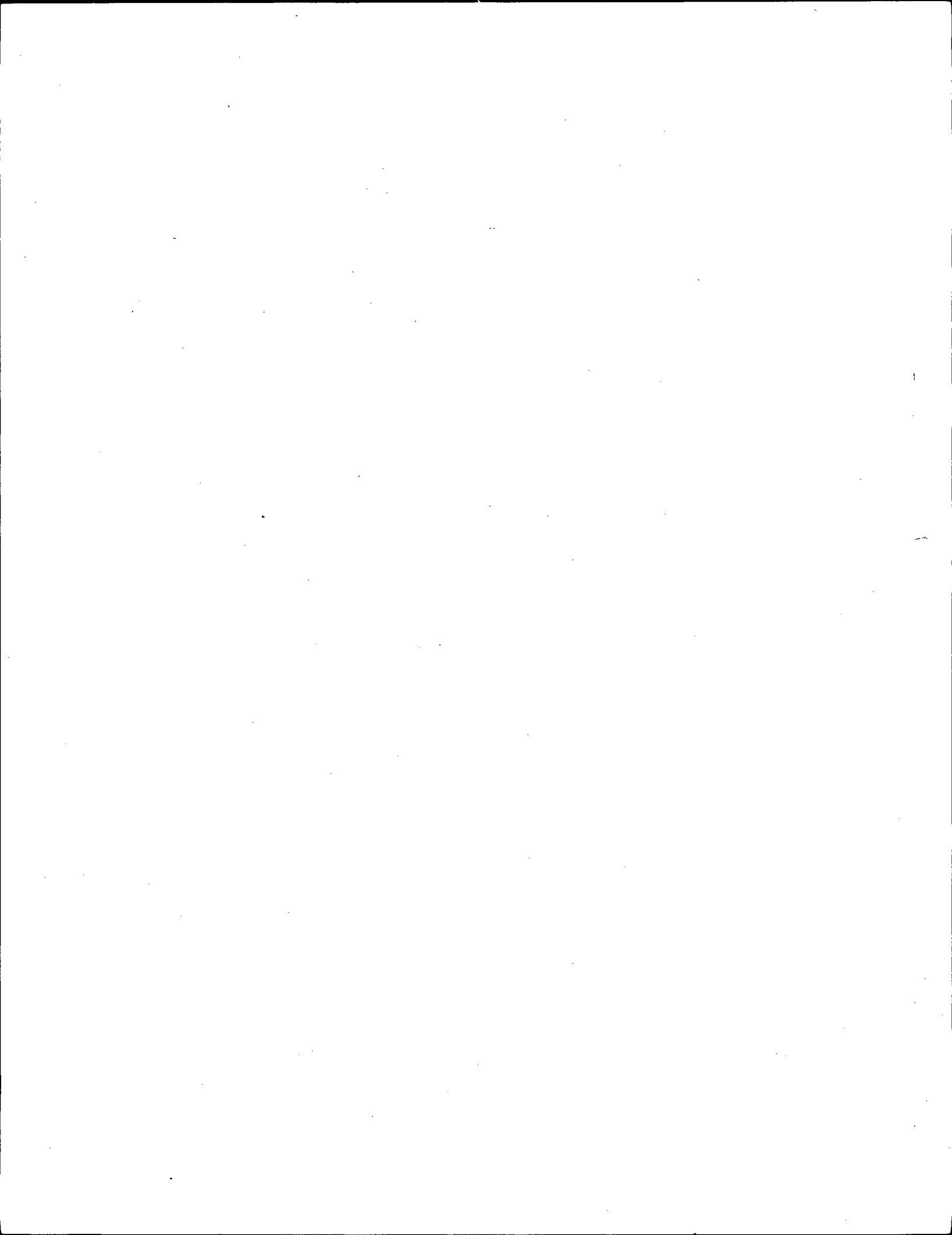
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DATE OF ACCEPTANCE: August 10, 1993

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- Appendix 13 - Deep Flow Recharge Analysis
- Appendix 14 - Leachate Collection at the Landfill Expansion
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William K. Reilly, to all Regional Administrators
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Assistant Town Attorney, Town of Brookhaven

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**TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
LIST OF DOCUMENTS INCORPORATED BY REFERENCE**

Transcript of June 11, 1993 Town Meeting with Suffolk County Health Department.

Engineering Design Report and Plans for the Town of Brookhaven Landfill Expansion - Cell 5. March, 1993. ⁽¹⁾

Draft Environmental Impact Statement for the Town of Brookhaven Landfill Expansion. October, 1992.

Town of Brookhaven, New York Solid Waste Management Plan: Final 1991 Update Supplemental Generic Environmental Impact Statement. April, 1991.

Town of Brookhaven, New York Solid Waste Management Plan: Draft 1991 Update Supplemental Generic Environmental Impact Statement. January, 1991.

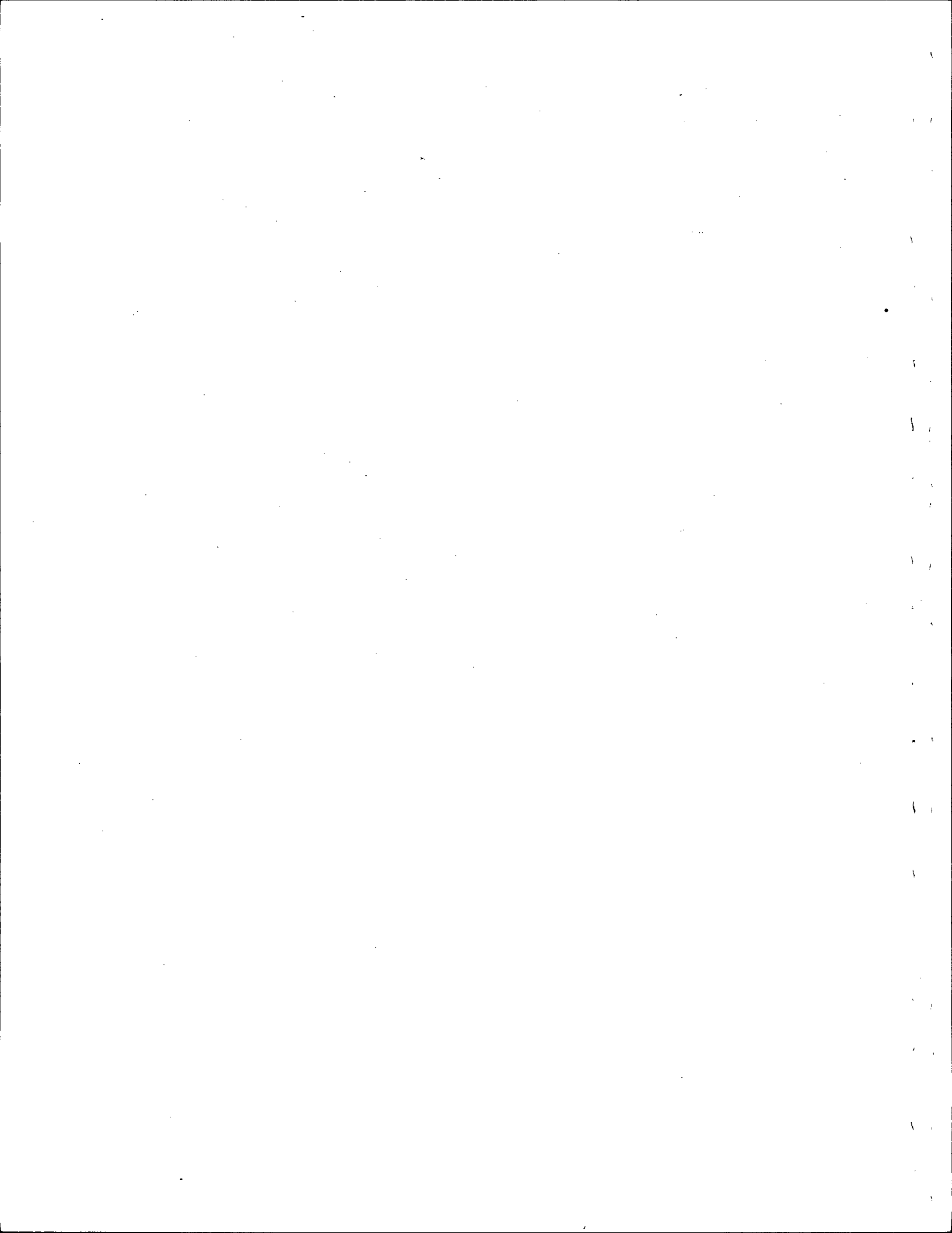
Town of Brookhaven, New York Comprehensive Recycling Analysis. August, 1990.

Town of Brookhaven, New York Solid Waste Management Plan: Final Generic Environmental Impact Statement. August, 1989.

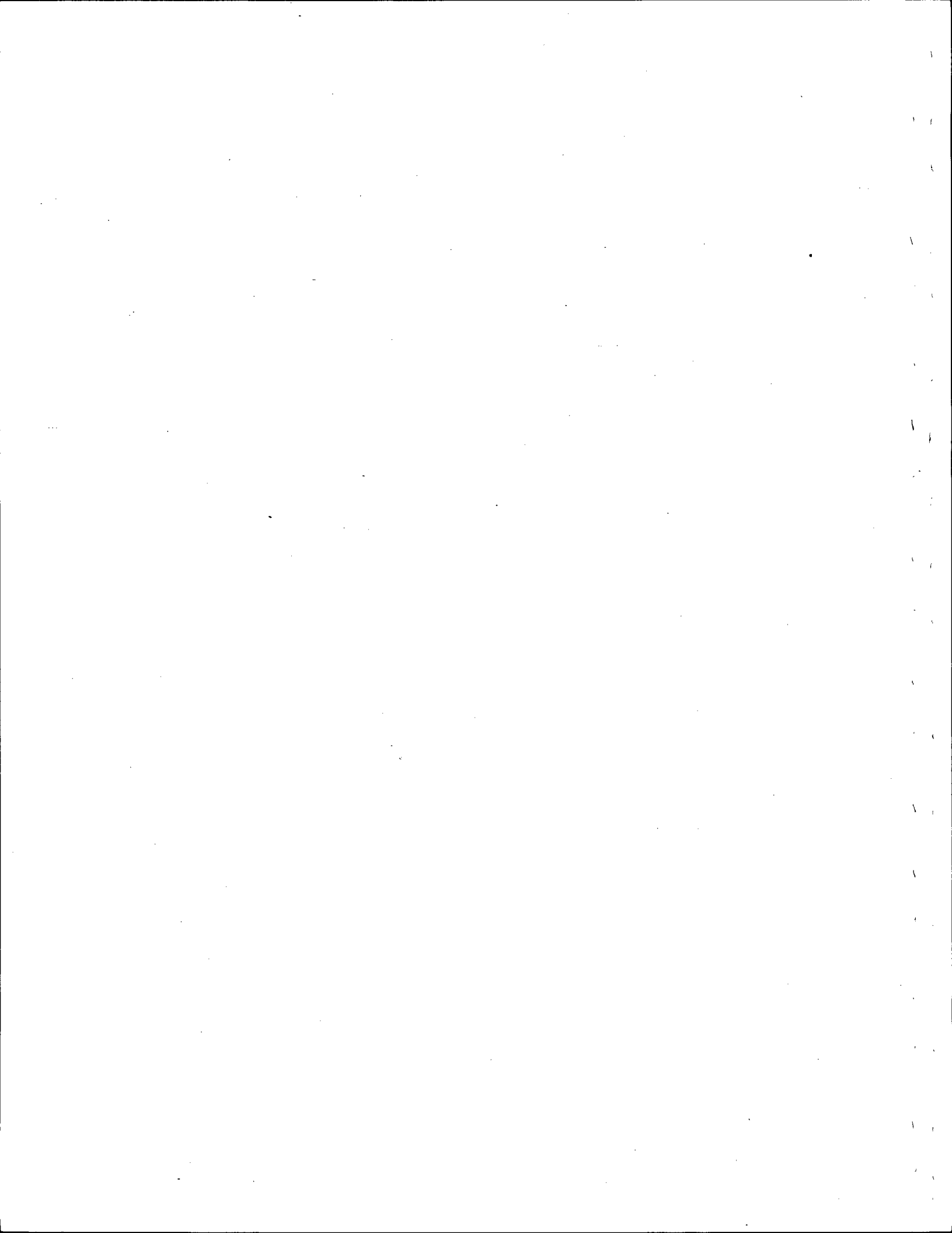
Town of Brookhaven, New York Solid Waste Management Plan: Draft Generic Environmental Impact Statement. March, 1989.

(1) The Engineering Design Report is composed of four volumes. Volume I contains the narrative description of the proposed facility; Volume II contains appendices, including design calculations; Volume III contains the Technical Specifications which detail the material, construction, and certification requirements; and Volume IV contains the Hydrogeologic Investigation Report that was prepared by Divirka and Bartilucci, and dated February 1993. The Engineering Design Report, in association with the Engineering Design Plans constitutes the application for a permit to construct the Landfill Expansion Area, pursuant to 6 NYCRR Part 360.

The Part 360 application for the Landfill Expansion Area, and its constituent documents, is incorporated by reference in specific response to comments requesting further details on specific issues. The Part 360 application provides detail on information which was summarized in the DEIS, and contains the basis upon which certain conclusions were drawn.



1.0 INTRODUCTION



1.0 INTRODUCTION

The development of the proposed Town of Brookhaven Landfill Expansion Area is one component of the Town's Comprehensive Solid Waste Management Plan (SWMP). The SWMP provides the framework within which future solid waste management activities will be conducted and, among other things, identifies a variety of waste reduction and recycling measures which will be employed to minimize the amount of solid waste which will ultimately require land disposal.

Other elements of the Town's SWMP include:

- Waste reduction programs.
- Mandatory source separation of designated recyclables.
- Material Recovery Facility (MRF).
- Household toxics control (STOP program).
- Yard waste composting.
- MSW composting.
- Construction and demolition debris processing and recycling.
- Land clearing debris processing and recycling.
- Major household appliances recycling.
- Tire management.
- Solid waste transfer station.

These components are in various stages of implementation.

This document is the Final Environmental Impact Statement (FEIS) for the proposed Town of Brookhaven Landfill Expansion Area (hereinafter referred to as the Landfill Expansion Area). The Landfill Expansion Area will consist of 56 acres of landfill area and 22 acres of ancillary facilities, all located within the property boundaries of the Town of Brookhaven Waste Management Facility Site.

This FEIS has been prepared in accordance with the requirements of the State Environmental Quality Review Act, Article 8 of the Environmental Conservation Law.

The Draft Environmental Impact Statement (DEIS) was accepted as complete by the lead agency, the Town of Brookhaven, on October 20, 1992. Two public hearings were held

(afternoon and evening sessions) on November 10, 1992, and the 44-day public comment period closed on December 4, 1992.

This FEIS consists of the DEIS (which is hereby incorporated by reference), all written comments on the DEIS (see Appendix 2), the transcript of the public hearings held on November 10, 1992 (see Appendix 1), and the Town's response to substantive comments on the DEIS, and all other documents incorporated herein by reference (See List of Documents Incorporated by Reference).

Appendix 3 provides a cross reference index which attributes the substantive comment(s) to the persons who provided the comments. Any appropriate supplemental information used in response to comments and any amendments made to the language presented in the DEIS, are presented directly within this FEIS.

After reviewing the comments and their respective responses, there are no substantive changes to the conclusions presented in the DEIS with respect to impacts anticipated for the proposed Landfill Expansion Area. Therefore, this FEIS concludes that the construction and operation of the proposed Landfill Expansion Area will result in the following unavoidable impacts:

- The topography of the proposed Landfill Expansion Area will be permanently altered by landfill construction and an increase in elevation.
- There will be some potential for contamination of groundwater.
- There may be a temporary, controlled increase in dust generation from the proposed Landfill Expansion Area during construction of the landfill baseliner.
- There may be a temporary, controlled increase in the rate of soil erosion from the proposed Landfill Expansion Area during construction.
- There will be a removal of additional vegetation in the Landfill Expansion Area.
- There will be additional disturbance and removal of existing soils in the borrow area during construction of the Landfill Expansion Area. Materials removed from the borrow area will continue to be utilized as cover material at the existing solid waste landfill and utilized at the proposed Landfill Expansion Area.

- Approximately 78 acres of property previously utilized as a soil borrow area will be permanently altered as a result of landfill and ancillary facility development.
- There will be an increase in the amount of traffic on roadways in the vicinity of the Facility Site as a result of vehicles utilized by workers and delivering construction materials for landfill development.
- There will be a potential increase in the amount of noise generated by trucks and landfill equipment.
- There will be a change in the visual and aesthetic character of the Landfill Expansion Area.

These impacts are essentially minor. Design and operational features of the proposed Landfill Expansion Area are expected to mitigate the potential for environmental impacts to the maximum extent practicable. These features include, but are not limited to, the following:

- Installation of a double composite landfill liner system.
- Groundwater monitoring well network surrounding the Landfill Expansion Area.
- Landfill gas collection and treatment.
- Phased development of landfill to minimize size of operational areas.
- Air/fugitive dust monitoring program.
- Impervious final cover with landscaping.
- Relocation of site entrance way and installation of a traffic signal.
- Maintenance of a 500-foot vegetative buffer between residential uses and the Landfill Expansion Area to eliminate noise impacts.
- Fugitive dust suppression through water spraying and by using intermediate cover on ERF Ash.
- Daily cover on all waste other than ERF Ash.
- Visual impact mitigation by maintenance of vegetative buffer and implementation of landscape plan.

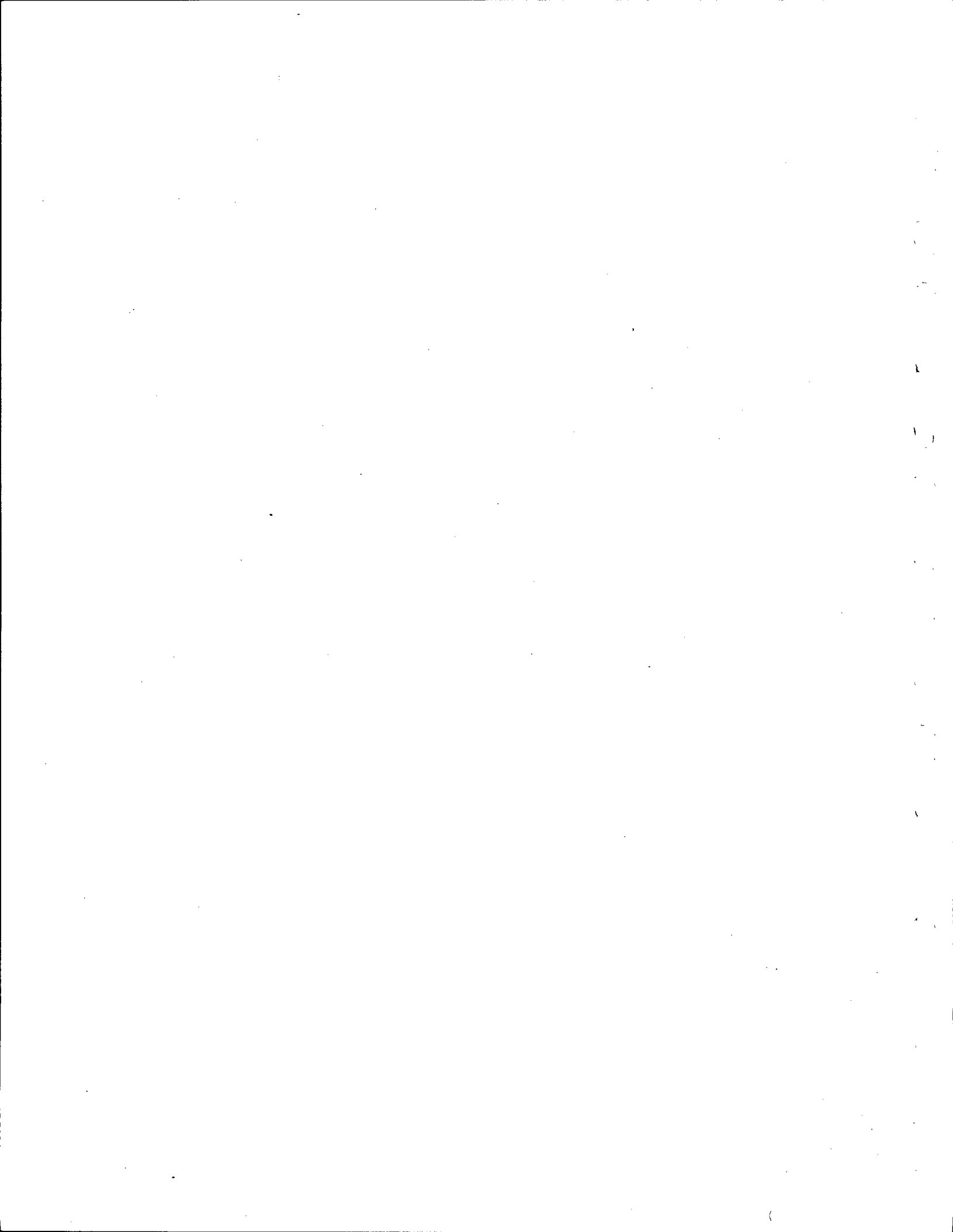
In addition, in response to public comments about the Existing Landfill and the proposed Landfill Expansion Area, the Town has reassessed residential properties in the Horizon Village neighborhood, as described in Response 3.5. The Town will also undertake the following measures in connection with the development of the Landfill Expansion Area:

Air Monitoring Program - An air monitoring network will be established to ensure that adverse impacts do not result from fugitive dust or other air emissions. This program is described in more detail in Response 7.5.1 and in Appendix 11.

Infrastructure Improvements in Horizon Village - These improvements will include tree plantings at critical locations to limit the visibility of the Existing Landfill and the Landfill Expansion Area. Planning and implementation of these improvements will be finalized in consultation with the local civic association and property owners. Preliminary plans for these improvements are presented in Appendix 18.

Nature Trail - The Town is intending to develop a nature trail around the perimeter of the Waste Management Facility Site, east of the MRF. Preliminary plans for this nature trail are presented in Appendix 19.

RESPONSE TO COMMENTS



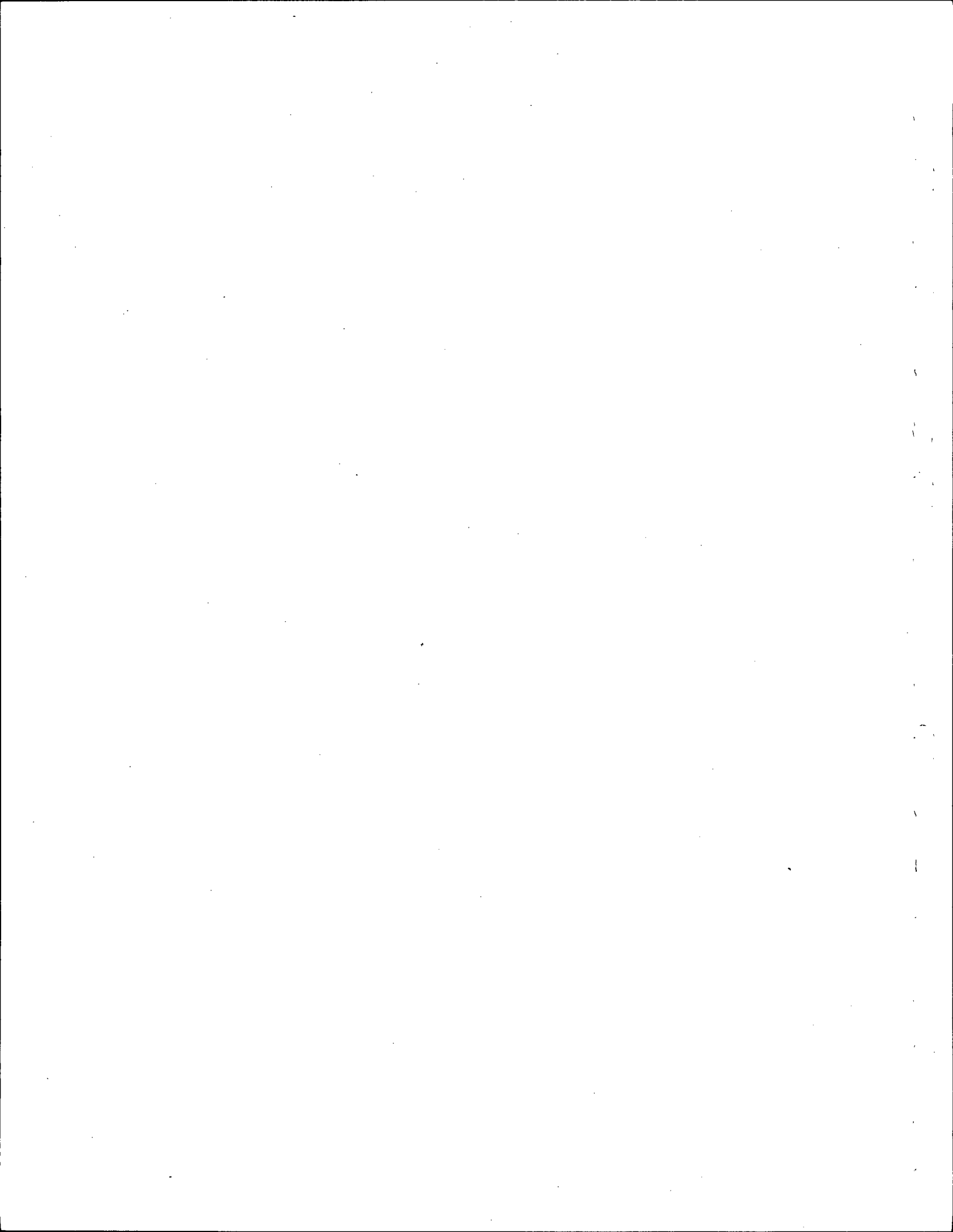
RESPONSE TO COMMENTS

Sections 2 through 10 of this document are a compilation of the substantive oral and written comments received on the DEIS for the proposed Brookhaven Landfill Expansion and responses thereto. The comments are summarized by major topical area. The complete text of the comments made at the public hearings on the DEIS is contained in Appendix 1; copies of the written comments are contained in Appendix 2.

Every effort has been made to compile a comprehensive listing of the comments received, without the restatement of repetitive comments. In order to ensure that the context of the original comments was not lost upon incorporation into a summarized statement, representative quotations from the commentors are also included, where appropriate. When numerous quotations are provided, the intent is to represent the full range of comments received.

Summarized comments are organized by subject matter within each topical area, and are indicated in bold face type. Quotations from commentors are provided immediately following the comments to which they refer. In some cases, where a comment represents very nearly a verbatim transcription, no quotations follow that comment.

Appendix 3 provides a cross reference index which attributes comment(s) to those persons who made them.



2.0 WASTE RECYCLING, REDUCTION AND REUSE ISSUES

including catalogues, junk mail, magazines, and telephone books. The inclusion of these new materials has substantially increased the throughput of the MRF.

Conceptual plans have been developed for the expansion of the existing MRF. The goals of this expansion are to increase the facility capacity by adding new material streams and to increase the quality of the recovered materials. The expansion of the MRF will allow the following material to be designated for recovery and recycling:

- Textiles
- Aseptic beverage containers (e.g., juice packs)
- Small metal objects (e.g., cookware, toys and small appliances)

The Town intends to request the existing MRF vendor to make the necessary improvements as a capital project under the terms of the Town's service agreement with the MRF vendor.

Weekly collection of recyclables is provided to all Town residents in single, double and triple family homes via Town-administered contracts with carters. Multi-family residences and schools within the Town are also separating paper products and commingled containers under the Town's direction. These materials are processed at the MRF. Commercial establishments are provided access to the MRF, at no charge, for disposition of source-separated recyclable materials. The Town will continue to take advantage of recycling opportunities, as markets and technologies permit.

The Town of Brookhaven is aggressively pursuing numerous waste reduction and recycling programs which are further described later in this response. In a recent story in Newsday ("Plans for Expansion of Dump Criticized," November 11, 1992), DEC Regional Director Ray Cowen commented on the Town's recycling program as follows:

"I think Brookhaven is doing a fine job of recycling. They're one of the towns that's right out there in the forefront. There's always room for improvement, but in comparison to Long Island, Brookhaven is going great."

In response to the comment that less than 15 percent of the Town's waste is being recycled, it should be noted that, in 1992, the Town recycled nearly 32 percent of the waste which was under its direct control. Programs under the direct control of the Town include separate collection of refuse and recyclables from residences and schools, collection of household appliances and other bulky waste upon request, collection of recyclables at voluntary drop-off centers, collection of yard waste and operation of yard waste compost facilities, and collection of office paper from Town offices.

For 1992, recorded tonnage for recyclable materials is summarized below.

MRF recyclables (excluding commercial recyclables like corrugated cardboard, mixed paper and phone books)	25,761	TPY
Appliances and Bulky Recyclables	2,276	TPY
Car Batteries and Waste Oil	181	TPY
Yard Waste (Leaves and Chipped Brush)	70,000	TPY
Office Paper	9	TPY
1992 Town Recycling Subtotal	98,227	TPY
Waste collected for disposal from residential sources plus MRF residue	212,769	TPY
1992 Residential Waste Disposal plus Recycling	310,996	TPY

The best measure of the effectiveness of the Town's recycling program is the ratio of the 1992 recycling subtotal to the sum of the 1992 residential generated waste collected for disposal plus the 1992 recycling subtotal. This ratio yields a recycling rate of 31.6 percent.

It is not possible to directly measure waste reduction or waste recycled by commercial recycling facilities since there are no uniform reporting requirements. Therefore, commercial waste collection and recycling are not factored into the recycling rate presented above.

In 1992, a total of 32,879 tons of recyclables were recovered at the Town's MRF. Some 15 separate products have been recovered at the MRF, and all have been sold at zero

or positive markets. These products include aluminum containers, aluminum foil, ferrous, flint, green, amber and mixed glass, 6 grades of paper, HDPE containers, and PET containers.

Upon request, residents can arrange for the Town's Department of Waste Management to collect discarded major household appliances and other bulk items for recycling. These materials are processed at Gershow Recycling, Inc., Medford, New York. In 1992, 2,276 tons of appliances and other scrap metal were delivered to Gershow.

Collection of recyclables is augmented by Town-operated, voluntary drop-off centers located at the Landfill site, the Holtsville Ecology Center, and at the Manorville facility. These locations accept discarded major household appliances, automobile batteries, aluminum, newspaper, magazines, glass, waste oil and yard waste.

In 1992, 20 tons of car batteries were recovered by the Town. In addition, the Town recovered 46,000 gallons of waste oil in 1992, which at a density of 7 lb/gallon represents 161 tons.

In addition to the recyclables curbside collection and drop-off operations, the Town continues to sponsor its office paper recycling program, originally instituted in 1987. This program focuses on the recycling of high-grade office paper collected from Town offices. White paper and computer paper from Town offices is processed at Brookhaven Recycling, Inc. All other paper is processed through the Town's MRF. In 1992, 9 tons of Town office paper were recovered as high-grade paper.

The Town intends to continue and expand its commitment to recycling. As indicated on Figure 2.1 in the DEIS, it is anticipated that by 1995, the Town will have in place programs and facilities to reduce/recycle/re-use approximately 63 percent of its overall waste stream. This program will not only meet but exceed the goals established by the State of New York.

With respect to the comment that the Town should increase the frequency of recyclables collection, it should be noted that the Town conducts once-a-week collections of designated residential recyclables. If individual residents are generating recyclable materials in quantities which exceed the capacity of their "red can", they can contact the Department of Solid Waste Management to get an additional "red can(s)".

2.1.2 Comment

The New York State Solid Waste Management Act of 1988 places the recycling alternative above others including energy recovery and landfilling. By expanding the landfill, the hierarchy is not being followed.

"The [Town's] solid waste management plan does not adhere to this hierarchy."

2.1.2 Response

The Town's Solid Waste Management Plan (SWMP) is consistent with the New York State Solid Waste Management Act (NYSSWMA) hierarchy of: 1) reduce; 2) recycle; 3) incinerate; and 4) landfill. The SWMP contains components which correspond to each of these elements of solid waste management. While waste reduction is largely a function of Federal and State legislation, the Town has charted an ambitious program which, by 1995, is projected to reduce/recycle/reuse 63 percent of its overall waste stream. The remaining waste, not subject to recycling or reuse, will, if processible, be sent to the Hempstead Energy Recovery Facility (HERF) for thermal processing (incineration). Non-processible waste which is not reduced or recycled will be managed at the Landfill Expansion Area.

Because all solid waste processing produces a residue, in one form or another, and because not all waste is processible through available, reliable, cost-effective means, a landfill is required for disposal. As noted in Section 1.3 of the DEIS, the Landfill Expansion Area will be utilized to dispose of unprocessible wastes from the Town's waste management systems, downtime waste from solid waste processing facilities utilized by the Town, ERF ash, process residues from other solid waste management facilities utilized by the Town, C&D debris process residues, car shredder residue, and clean fill. As a result, the Town's SWMP is in complete compliance with NYSSWMA hierarchy, in that the Landfill Expansion is designed to receive wastes only after they have been subjected to the greatest practicable degree of reduction, recycling, reuse, and incineration.

2.1.3 Comment

Public education and awareness about recycling issues should be increased.

"The Town should start an educational campaign to encourage home composting."

"We would like to use the opportunity with the children to start reinforcing the idea of everyone producing less garbage on Long Island."

"We can go on to let people on Long Island become aware of simple things that they can do so that we don't have to use 78 acres of land for landfill, so that we can produce less garbage."

2.1.3 Response

The Town has undertaken a comprehensive public education program as part of its Intensive Recycling/Non-Incineration Plan, which is described in detail in Appendix A of the Draft Supplement to the GEIS/SWMP (January 1991). The education program has been developed utilizing a variety of information networks. A full-time recycling educator, with teaching credentials, presents programs focusing on recycling, composting, and litter prevention to elementary and secondary schools, senior citizen groups, and other community groups.

The Town has instituted a home composting demonstration project and utilizes various communication media for distributing this information. The recycling educator uses slide presentations and the home compost demonstration project to promote public interest. In addition, recycling issues are featured in a Town newsletter, and the Town advertises its program through radio and television commercials, as well as the distribution of leaflets and brochures.

The Town has also instituted a "Don't Bag It" program to encourage residents to leave their lawn clippings on the ground. Educational brochures about the "Don't Bag It" program were mailed to Town residents in mid-1992. Educational seminars have been held for residents in August 1992 and February 1993. In accordance with its CRA, the Town will

continue in its educational efforts to promote its "Don't Bag It" program as well as other waste reduction methods.

2.1.4 Comment

The Town may be in violation of Section 120-aa of the New York State Law that requires municipalities to have a mandatory source separation law for all waste for which economic markets exist.

"A State law went into effect on 1 September 1992 that requires all municipalities to adopt an ordinance which require an assessment of whether solid waste left for collection could be recycled. Those materials in the waste stream that cost the same or less than the existing alternatives would be judged to have a market and would have to be recycled. This law seeks to require municipalities to test whether it pays to recycle in comparison with other alternatives. The Town has so far ignored this law nor has it complied with the intent of the law: compliance would save the taxpayers money."

"Town has failed to enforce its local law."

"Fine people who are not complying."

2.1.4 Response

New York General Municipal Law (GML) Section 120-aa provides, in pertinent part, the following:

- . . . a municipality . . . (shall) adopt a local law or ordinance to require the source separation and segregation of recyclable or reusable materials from solid waste.
- . . . no later than September first, nineteen hundred ninety-two, a municipality shall adopt such a local law or ordinance to require that solid waste which has been left for collection or which is delivered by the generator of such waste to

a solid waste management facility, shall be separated into recyclable, reusable or other components for which economic markets for alternate uses exist...(N.Y. Gen. Mun. L. Sec. 120-aa (1) & (2)).

The provision also provides, prior to enacting such a local law or ordinance, that the municipality:

...shall hold a public hearing relating to its proposed provisions and shall give due consideration to existing source separation, recycling and other resource recovery activities in the area, to the adequacy of markets for separated materials, and to any additional effort and expense to be incurred by residents in meeting the proposed separation requirements (N.Y. Gen. Mun. L. Sec. 120-aa (2)(c)).

The Town has been in full compliance with Section 120-aa since 1988, more than three years before it was required to be in compliance. On November 15, 1988, after a public hearing, Brookhaven's Town Board adopted Local Law No. 27-1988, in part, to address the issue of mandatory source separation within the Town, in compliance with the provisions of GML Section 120-aa. Local Law No. 27-1988 became effective on January 1, 1989.

Brookhaven's source separation law mandates a source separation program for designated recyclables within the Town. Designated recyclables may include newspaper, high grade paper, corrugated cardboard, glass and plastic containers, cans, vegetative yard waste and other recyclable materials as designated by a resolution of the Brookhaven Town Board.

Neither the NYSDEC, nor any other commentor, has identified to the Town any recyclable materials not covered by the Town's law for which economic markets exist.

With respect to enforcement, the Town's Recycling Law contains provisions, including fines, to ensure compliance with its requirements. To date, the Town has not deemed it necessary to use fines as a method of inducing public participation in mandatory source separation and recycling programs. The Town's preferred approach has been education and program promotion, and this has worked well thus far. While education and promotion will continue to be the preferred approach to insuring maximum participation

in mandatory recycling, the Town reserves the right to pursue enforcement actions and fines, if necessary, in the future.

2.1.5 Comment

Increased recycling and waste reduction by the Town would eliminate the need for the Landfill Expansion or allow for a smaller scale of the expansion.

"We feel that this (expansion) is unnecessary and it's detrimental to our community. We feel that efforts to recycle have not been fully pursued, and we would like to see the Town hold up on approval of the landfill expansion and further explore recycling."

"More emphasis (should be placed) on recycling and less on capital intensive alternatives."

"Missing from this discussion (alternative technologies) is an analysis of the effects on landfill demand which alternative technologies and possible legislation will produce."

2.1.5 Response

Increased recycling as a complete alternative to the Landfill Expansion Area or to provide for a smaller size landfill was evaluated as part of the Town's Solid Waste Management Plans (SWMP), and the reader is referred to all of the SEQRA documents in connection with the SWMP for that evaluation. However, it should be noted that the Town is implementing an aggressive waste reduction and recycling program, previously described herein and in the DEIS, and in documents incorporated therein by reference. As shown in Figure 2-1 of the DEIS, in the year 1995, approximately 1,450 tons of waste (out of a total of 2,000 tpd) will be subject to waste reduction and recycling measures in the Town. Subtracting out anticipated residuals of 192 tpd, these reduction and recycling efforts amount to nearly 63 percent of the waste stream, well in excess of the State's goal of 50 percent reduction and recycling by 1997. Aggressive implementation will be needed to reach the Town's goals; the Town's success in such measures is by no means assured. The

Landfill Expansion Area is, however, sized assuming that the Town will achieve its recycling goals.

Even if the Town could increase its recycling and reduction achievements beyond those which are anticipated, the need for the Landfill Expansion would not be eliminated because all material recovery, recycling and composting processes generate residues which, to be properly managed, must be landfilled.

As discussed in Section 7.3 of the DEIS, Cell 5 has been designed to allow for flexibility should future waste quantities either fall short of, or exceed, projected quantities. The Town believes that it is more prudent to design for such flexibility than to deliberately build a facility smaller than what is called for in its SWMP. This site-specific EIS for the Landfill Expansion Area must be read in conjunction with the development of the Town's SWMP and the alternative analysis contained in the GEISs for the SWMP, which is incorporated by reference. The GEISs for the SWMP are part of the basis of the evaluations contained in the DEIS and this FEIS.

2.2 COMMERCIAL RECYCLING

2.2.1 Comment

The Town of Brookhaven is not recycling commercial waste. More of an effort should be made to recycle the commercial portion of the waste stream.

"I really appreciate all your efforts on recycling, but I am opposed to Cell 5 until we have a reduction of waste by having commercial garbage recycled."

"The Town should initiate a red can pick up for commercial facilities similar to the program in effect for residential areas."

"The Town should consider implementing a commercial recycling program to minimize waste before it opens more landfill area since two-thirds of the waste is created by businesses."

2.2.1 Response

The Town's mandatory recycling law requires that commercial establishments separate and recycle designated recyclables including corrugated cardboard and high grade office paper. These two components represent a large portion of the commercial waste stream. Since the enactment of the Town's recycling law, there has been a significant reduction in the quantity of commercial waste delivered to the Waste Management Facility Site. Some portion of this reduction can be attributed to commercial recycling efforts, although this portion cannot be accurately quantified for reasons noted below. Moreover, any further reductions in commercial waste deliveries which may result from future waste reduction or recycling efforts will have no effect on the need for, or design of, the Landfill Expansion Area (See Response 2.1.5).

Under the Town's law, arrangement for collection of designated recyclables at commercial establishments is the responsibility of the person who owns, manages, or operates the establishment, or of the waste collection company which services the establishment. Unlike residential waste, the Town does not collect waste from commercial establishments and, thus, cannot directly control the flow of recyclables collected at commercial facilities. These circumstances limit the ability of the Town to control the commercial waste stream to the same extent that it controls the residential waste stream.

One commentator suggested that the Town should implement a "red can" pick-up for commercial facilities similar to the program in effect in residential areas. This is not a practicable option for a number of reasons. First, the Town is not empowered to monopolize the flow of recyclables from commercial establishments which use private haulers. Second, even if it could be so empowered, implementation of a commercial "red can" program would cause the Town to incur costs that it would need to recover through some type of equitable formula. Development of a cost recovery method is expected to be contentious and time consuming. Finally, even if a "red can" program could be initiated, there is no reason to believe that participation in commercial recycling programs would be more favorable than it would otherwise be under the approach which is currently planned.

Another commentator suggested that two-thirds of all waste is generated by business. This is not borne out by waste delivery records kept by the Town. Table 2.1-1 of the DSGEIS, which is incorporated by reference in this FEIS, presented a summary of waste received at the Brookhaven Landfill during 1989. This table shows that residential waste

deliveries exceeded commercial waste deliveries by 30 percent. Data from 1990 shows that residential waste deliveries exceeded commercial deliveries by over 90 percent. Waste delivery records from 1992 indicate that residential waste deliveries exceeded commercial waste by a ratio of 3 to 1; 207,853 tons of residential waste versus 69,437 tons of commercial waste. Data for 1993 exhibit a similar relationship.

The Town has long recognized the importance of including solid waste generated by commercial activities in its recycling programs. The 1991 Update to the SWMP noted that certain commercial and industrial establishments within the Town were already engaged in recycling such items as corrugated cardboard, scrap metal, and computer paper. In addition, the CRA, developed in 1990, recognized the need for the Town to encourage and educate commercial facilities to recycle.

The Town's current solid waste management system allocates approximately 15 percent of the Town's municipal waste (360 TPD) to private recycling efforts (private recycling, C&D processing and appliance recycling). As part of its future solid waste management efforts, the Town plans to continue to encourage commercial generators of waste to expand private recycling efforts to foster a greater overall recycling rate, and to supplement recycling efforts where private industry does not provide the necessary service. The Town also plans to intensify its public information/education program targeted at businesses.

2.2.2 Comment

The Town of Brookhaven is not complying with the state solid waste management hierarchy and with mandatory recycling requirements because it does not have a commercial waste recycling program.

"(With) the lack of a proactive recycling program, we're concerned that might violate Section 120-aa of the New York State Law that requires municipalities to have on the books a mandatory source separation law for all waste for which economic markets exist."

"The solid waste management plan does not adhere to this hierarchy, and it does not because, number one, it does not incorporate commercial waste in its recycling program."

"A State law went into effect on September 1, 1992 that required that all municipalities adopt an ordinance which would require recycling. I want to know how the Town can comply with that if it is not recycling commercial waste.

2.2.2 Response

As described in Response 2.2.1, the Town's Mandatory Recycling Law requires commercial establishments, among others, to source separate and recycle designated components of the waste stream. The Town's MRF provides for the delivery of commercial recyclables such as corrugated containers, mixed office paper, and telephone books. The Town intends to intensify its public information/education program targeted at business to maximize commercial recycling and to supplement recycling efforts where private industry does not provide the necessary service.

As shown in Figure 2-1 of the DEIS, by the year 1995, the Town anticipates that solid waste management programs and facilities will be in place that will (in the absence of facility downtime) result in the Town's ability to cease landfilling of any processible waste material, including that generated by the commercial establishments within the Town. Future success in increasing the amount of commercial waste recycled, along with potential waste volume reductions resulting from Federal and State initiatives, has the potential for reducing overall disposal costs as well as reducing/preserving ultimate disposal capacity.

The comment regarding compliance with Section 120-aa of New York General Municipal Law was addressed previously in Response 2.1.2.

2.3 WASTE REDUCTION

2.3.1 Comment

The Town of Brookhaven has not done enough to encourage waste reduction (i.e., decrease the total amount of waste generated within the Town).

"The Town has not yet developed a plan that would help the businesses of the Town participate effectively in a waste reduction plan."

"The Town should support excess packaging legislation and should support the Suffolk County Plastic Ban"

"The Town should consider charging for trash disposal on a weight basis."

"The Town should consider a battery deposit law."

2.3.1 Response

The proposed development of the Landfill Expansion Area is consistent with the goals of both the Town of Brookhaven Solid Waste Management Plan (SWMP) and the New York State Solid Waste Management Plan (NYSWMP). The NYSWMP has established an overall hierarchy for management of solid waste. An initial and key component of the State hierarchy is the reduction in the volume of waste material generated. By first reducing the volume of waste material generated, the need for solid waste management and disposal facility capacity is thereby reduced.

The ability of local government and its citizens to control the volume of waste generated is, however, limited. The USEPA has stated that the "most important participants in increasing source reduction activities are the manufacturing and design industries" (The Solid Waste Dilemma, USEPA, 1989). That is, changes in the way products are produced, marketed, and packaged need to occur on an industry-wide level. Motivated by Federal regulation and incentives, the role of local government and the public in general should be to "purchase products that minimize waste, last longer, or can be repaired or remanufactured," according to the EPA.

The Town of Brookhaven has adopted the goal of waste reduction as the first step in its overall Solid Waste Management Plan. The Town's SWMP has embraced the New York State goal of achieving a ten percent reduction in the overall waste stream.

Regarding legislation to limit excess packaging and requiring deposits on batteries, the Town SWMP specifically supports Federal, State and County initiatives aimed at reducing packaging materials and requiring deposits on batteries and other products.

Suffolk County has enacted a law which bans the use of styrofoam containers in restaurants and certain other retail establishments, but this law is not yet being enforced. New York State has already enacted a law requiring retailers and wholesalers to accept lead acid batteries returned by consumers. Because of these waste reduction initiatives taken at the County and State levels, no additional legislative action by the Town of Brookhaven is necessary in this regard. As part of its household hazardous waste collection program, the Town will accept household batteries for special handling separate from the remainder of the solid waste stream. The Town also accepts source-separated lead acid batteries delivered to the Waste Management Facility for recycling.

In addition to the Federal, State and County initiatives, the Town will continue to rely on consumer education programs, preferential procurement practices and promoting voluntary industrial cooperation as a means to reduce the overall amount of waste generated. As noted in Response 2.1.3, the Town employs a full-time recycling educator to promote waste reduction and recycling. However, the local community is limited in what can be done in this area, and strong national and state initiatives are necessary to achieve the desired goal.

In addition, the Town promotes a "Don't Bag It" program, which is a waste reduction technique for grass clippings. This program is described further in Response 2.3.2.

Regarding the comment that the Town should consider weight-based trash disposal charges, it is noted that the Town's present system provides substantial economic incentive for waste reduction and recycling. The per ton tipping fee charged for waste deliveries at the Waste Management Facility Site pays for the operation of facilities at that site, including the MRF, transfer station, and landfill. These tipping fee revenues also subsidize the Town's recycling program. Further, the Town has avoided large capital expenses, such as a waste-to-energy facility, which require fixed debt service payments. The Town has also avoided making minimum put-or-pay delivery commitments to disposal facilities. These avoidances result in lower solid waste program cost and opportunity cost.

2.3.2 Comment

The Town should make mandatory the "Don't Bag It" program.

"I encourage the Town to initiate programs to reduce the amount of waste generated and increase the amount of materials recycled or composted. Specifically, I recommend that the Town initiate a "Don't Bag It" program for grass clippings such as the one adopted by Islip."

"The Town has announced a voluntary "Don't Bag It" program (but) it should be made mandatory."

2.3.2 Response

The Town instituted a "Don't Bag It" Educational Program in 1992. In mid-1992, educational brochures were sent to Town residents. In August 1992, a seminar was held for local landscapers to educate them regarding the program. A follow-up seminar was held in February 1993 at the Brookhaven Flower Show. Future plans call for continued educational efforts and the potential for obtaining an agreement with local lawn-mowing suppliers to provide discounts on purchases of mulching lawn mowers.

The Town does not intend to make the "Don't Bag It" program mandatory because leaving grass clippings on the lawn is not always the most appropriate management technique, and because it may result in an increase in illegal dumping of yard waste. Under certain circumstances, such as when mowing tall grass without a mulching mower, grass clippings should not be left on the lawn. Furthermore, the Town is currently planning to procure a composting facility which will be able to accommodate grass clippings, along with other organic components of its solid waste stream. In connection with this, the Town plans to move to a dedicated bag collection program to help assure that grass clippings and other yard waste that are left for collection will be composted, and not landfilled or burned.

2.3.3 Comment

Increased waste reduction efforts would reduce the need for the Landfill Expansion.

"A shorter, smaller project, we feel, should be given more in depth consideration than is apparent in the DEIS."

2.3.3 Response

This comment has been previously addressed in Response 2.1.5

2.4 WASTE MINING/SPACE REUSE

2.4 COMMENT

The Town should look into the alternative of mining the Existing Landfill and recycling the waste.

"The Town should look at alternatives such as mining and recycling our Existing Landfill and getting rid of what we have, and stop taking other towns' trash and ash."

2.4 RESPONSE

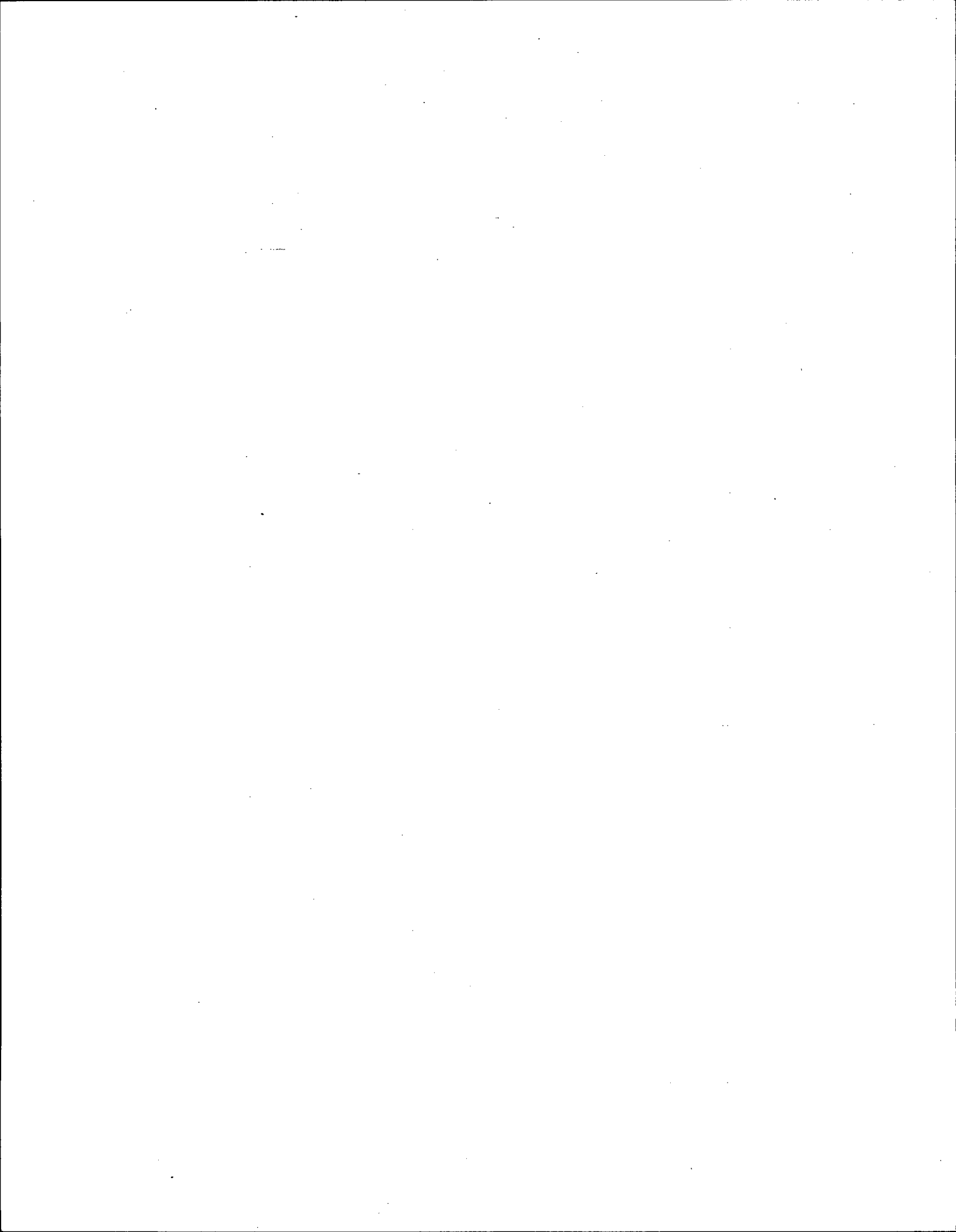
Landfill mining or landfill reclamation is the process of excavating a solid waste landfill to recover materials, and, in some cases, extend the landfill life. Using conventional surface mining techniques and specialized separation equipment, the technology seeks to separate a landfill into recyclable materials, combustible materials, soil/compost and residual waste.

The technology of landfill mining has not developed to the point where the Town can rely on it as a reasonable alternative to the Landfill Expansion Area. Many uncertainties are associated with landfill mining, including:

- The generation of odors and other vectors associated with excavation, movement and processing of previously-landfilled solid waste. Since odor problems have arisen from excavations of waste made as part of the ongoing closure of the Existing Landfill, it is ill-advised to consider breaking the final cover system and removing and processing the waste therein.
- Landfill mining has yet to be successfully conducted at the scale which would be required for the Existing Landfill at the Facility Site.
- Mining of the Existing Landfill would require destruction of the final cover system constructed by the Town, and the loss of the value of the Town's investment in the final cover system.

Given these uncertainties, landfill mining at the Facility Site is not a reasonable alternative at the present time. The Town will continue to monitor future developments of this technology, including the progress of the ongoing feasibility studies being conducted by the New York State Energy Research and Development Authority (NYSERDA).

3.0 EXISTING LANDFILL OPERATIONAL ISSUES



3.0 EXISTING LANDFILL OPERATIONAL ISSUES

Although the continued operation of the Existing Landfill is beyond the scope of the action being reviewed, this section summarizes and responds to comments relating to the operation of the Existing Landfill. Similar concerns expressed in connection with the proposed Landfill Expansion Area are addressed separately in Sections 7.0 and 8.0 of this document.

3.1 ODOR/LANDFILL GAS MANAGEMENT

3.1 COMMENT

There is a serious odor problem resulting from the current operation of the Existing Landfill. Odor from the Existing Landfill operation is an ongoing issue that affects local residents and children that attend school in proximity to the Existing Landfill. How will the Town stop the odors emanating from the Existing Landfill and assure local citizens that the new Cell 5 will not create additional odor problems?

"We were promised (at those meetings) that not only the odor but other concerns of the citizens would be taken care of within a very reasonable amount of time. I think one of the time frames mentioned at that time was three months. As far as I can tell, as far as I can see, as far as I can smell, none of those concerns have been taken care of to this point."

"During the past year nothing has changed. The air still smells. Our schoolyard is still littered with the garbage that blows from the dump on - on our school property... children still complain that they have irritated eyes, problems with breathing and headaches. Nothing that has been done by the Town has changed anything for very much."

"I could spend five, ten or fifteen minutes of tales of people who can't live in their own yards, in addition to people who don't want their kids out in the school yards at Hampton Avenue thanks to the odors, which by the way have been visibly better, and the Town has worked on that."

" I'm becoming more and more concerned as I come to these meetings and hear these reports and smell the smell in my backyard."

"The smell was inside the school as compared to the odor outside."

"I teach at Hampton Avenue School and live in Southhaven. We still smell the landfill. Last Thursday was especially bad at school. No matter what time of day, it seems the odor is usually present someplace in our school district or in our community."

"Sunrise Highway seems to be the strongest point of the odors that were emanating from the landfill...it was a little more than an odor, because you could actually taste it..."

"There are days when the odor from the landfill can make us sick to our stomachs."

"There are days when the odor is so unbearable that I have to leave my house."

3.1 RESPONSE

The odor problem from the Existing Landfill was primarily caused by the regrading of waste during placement of an impervious final cover on inactive portions of the Existing Landfill. In 1992 and 1993, the Town took numerous steps to solve the problem, including the installation of additional gas recovery wells, gas flares, limitations on the acceptance of processed C&D debris residue, and the placement of additional cover at the site. State regulatory agencies, legislative leaders, the Governor's Ombudsman, and representatives of the local school district and civic associations have all been involved in the Town's efforts to address these issues.

The Town's odor mitigation plan for the Existing Landfill included the following components:

- Electric Flare Sensors with automatic shut-off and alarm system on the Town's stick flares
- Phase II Overliner Construction
- Phase III Capping
- Landfill Gas Agreement and Flare Construction

To date, the Town has completed all but one of the elements of its odor mitigation plan. The Town's contractor has recently completed the capping of all of the inactive areas of the landfill. Hydroseeding of the last capped section was concluded during Spring 1993. In addition, the Town responded to odor complaints in October and November 1992, by moving gas flares and collection pipes as needed, to accommodate the capping contractor's activities. The only element of the plan which has not been completed is construction of the permanent flare, the status of which is described below.

The Town has also executed a Landfill Gas Agreement which requires the contractor to design, permit, and construct a permanent landfill gas control flare. A temporary flare has been installed and the Town's stick flares have been taken out of service.

The temporary contractor flare is a J-W Portable Flare (Model LM-25) capable of burning up to 1,000 cubic feet per minute (CFM) of landfill gas. Its features include automatic shut-down, manual and automatic start and re-start, and a propane pilot ignition system. This temporary flare represents an improvement over the stick flares due to greater capacity and better efficiency. The Contractor has submitted a permit application for the permanent flaring system with a capacity of 3,000 CFM, to the NYSDEC, and this system is scheduled to be operational in 1993.

The effectiveness of the Town's odor mitigation plan is evidenced by the general absence of odor complaints since the beginning of 1993. The New York State Department of Environmental Conservation conducts several air quality surveys each week to monitor odor from the Existing Landfill. At a meeting held on June 11, 1993 to discuss health issues related to the Existing Landfill, NYSDEC representative Tony Cava noted that there has been a great reduction in the odor impact on the community from the Existing Landfill. The transcript from the June 11, 1993 meeting is incorporated by reference into this FEIS.

Continued improvements are expected to occur as a result of the completion of the capping at the inactive sections of the landfill, and the installation and operation of the permanent landfill gas control flare.

Health issues associated with the landfill gas are addressed in Response to Comment 3.2.1.

Odor control measures to be employed at the proposed Landfill Expansion Area are addressed in Response to Comment 8.3.1. It should be noted, however, that by the time the Landfill Expansion Area begins accepting waste, the odor mitigation program for the Existing Landfill will be completed, and the final closure and capping of the Existing Landfill will have progressed further. Thus, the Town expects that the odor problems connected with the Existing Landfill will be even more fully resolved by the time that the Landfill Expansion Area opens.

3.2 HEALTH

3.2.1 Comment

Many commentors expressed concerns that the Existing Landfill operations were adversely affecting the health of neighborhood residents as well as children and staff at the Hampton Avenue School. There is a general concern about health impacts caused by degraded groundwater and air quality in the vicinity of the Existing Landfill, particularly the air quality at the schools in proximity to the site.

"We are very concerned about the health of our children, and we feel that the Town and the Town Board must address these issues before going ahead with the landfill expansion."

"We're concerned about our health, the health of our children, being able to sell our homes, public water for everyone in the community."

"I'm here with firsthand knowledge of sick children; firsthand knowledge of discolored, smelly water coming out of my faucet; firsthand knowledge of people not being able to sell their homes."

"...there have been scientific studies published in the past year in science and other journals which have definitively linked upper respiratory problems with fumes from dumps."

"Vaccinate people living/working in close proximity to the landfill."

"There is an increased incidence of breast cancer in Nassau and Suffolk Counties."

3.2.1 Response

In connection with the odor problem discussed in Response 3.1.1, and concerns about possible health risks associated with the odor, the NYSDEC has been monitoring the levels of hydrogen sulfide gas around the Waste Management Facility Site. Hydrogen sulfide is the primary component of the odor detected in the vicinity of the Waste Management Facility Site in the past. With assistance from the Suffolk County Department of Health Services, the NYSDEC, in a December 14, 1992 status report, determined that the levels of hydrogen sulfide gas that had been measured at the landfill and in the surrounding community do not pose a health concern.

At a June 11, 1993 meeting on this subject, Dr. Mafhous Zaki, Director of Public Health for Suffolk County, noted that gas concentrations were very low, and that it is difficult to prove that adverse health effects are occurring. Specifically, Dr. Zaki noted that "... I am not negating that these symptoms might have been attributed to the odor or to the contaminant coming from the landfill. I'm not saying it does not, but it's difficult to prove" (Transcript, page 64); "... these subjective symptoms and the contaminants that you saw in the report, I can't say at this concentration they are detrimental to life. I don't say they may cause symptoms, but I don't see anything that can kill somebody. In other words, these concentrations are very low" (Transcript, page 87-88). The transcript of this June 11, 1993 meeting is incorporated by reference into this FEIS.

Potential acute effects associated with hydrogen sulfide include irritation of the eyes and the respiratory tract (OSHA, 1978). The current permissible exposure limit (PEL) established by OSHA for hydrogen sulfide is 10 ppm. Levels of hydrogen sulfide monitored

off site by the NYSDEC, have been below this 10 ppm threshold. The Occupational Health Guideline for hydrogen sulfide, published by OSHA, is presented in Appendix 4.

Landfill gas samples were collected at the Brookhaven landfill on December 21, 1992. These results are presented in Appendix 5. Except for hydrogen sulfide gas, discussed above, none of the minor or trace constituents of gas were present in quantities in excess of OSHA limits. These samples were collected directly from the landfill gas collection system and, as such, do not represent ambient conditions on or off the Waste Management Facility Site. Ambient off-site concentrations of the compounds shown in Appendix 5 would be significantly less due to dispersion and dilution.

A literature search was conducted to identify publications reporting on issues related to health effects associated with occupational exposure and nearby residential exposure, to gaseous emissions from sanitary landfills (Peteranecz, 1992; SWANA, 1992; Strauss and Swallow, 1988; Straus, 1988; GRCDA, 1986). Landfill gas consists primarily of methane, carbon dioxide, nitrogen and oxygen, with trace amounts of other constituents. Trace constituents of carcinogens such as benzene and vinyl chloride are cited in the literature as potential concerns. It should be noted that landfill gas samples from the Existing Landfill (see Appendix 5) detected no vinyl chloride in either of the two samples, and no benzene in one of two samples. One landfill gas sample contained a measured benzene level of 1.3 parts per million.

From the standpoint of occupational safety, the primary gases of concern are methane, carbon dioxide and hydrogen sulfide. Methane and carbon dioxide are simple asphyxiants which pose a hazard in confined spaces at a landfill site. Further, methane presents an explosion hazard at certain concentrations. Hydrogen sulfide gas can also be present in landfill gas in hazardous concentrations. To mitigate these hazards, landfill gas venting systems are installed and landfill employees are trained to avoid hazardous situations. While these gases may present potential occupational hazards, it is unlikely they would adversely impact surrounding residents because concentrations will become more dilute as they move away from the emission source.

The NYSDEC will continue to monitor the air quality, and the Town will continue to pursue its gas control strategy for the Existing Landfill (discussed in Response 3.1) in order to continue controlling odors and to continue to verify that observed concentrations

of constituents of landfill gas do not pose a significant health risk. In addition, the Town will participate in the health impact study described in Response 3.2.2, below.

Potential impacts associated with groundwater degradation from the Existing Landfill are discussed in Response 3.3.

One commentor suggested that people living/working in close proximity to the landfill should be vaccinated, but does not specify to which disease or virus the vaccination would apply. The commentor may be referring to the Hepatitis B virus, a blood-borne pathogen which can be transmitted in sewage and, less commonly, in solid waste. However, there is no evidence to suggest that persons living in the vicinity of the Brookhaven Landfill would be at risk of contracting Hepatitis B simply due to that proximity. Therefore, there is no reasonable basis for suggesting a vaccination for Hepatitis B.

Another commentor noted that there is an increased incidence of breast cancer on Long Island, but there has never been any evidence presented to suggest that the existing Brookhaven Landfill contributes to this increased incidence. It is noted that The National Institutes of Health Revitalization Act of 1993 was signed into law on June 10, 1993. This law contains provisions for a case-control study to assess biological markers of biological and other potential risk factors contributing to the incidence of breast cancer on Long Island. Among other factors, exposure to contaminated drinking water and hazardous and municipal waste will be evaluated in this study which is scheduled for completion within 30 months of the effective date of the Act.

3.2.2 Comment

An informal survey of staff at the school indicated that a variety of health impacts could be attributable to the landfill. The survey indicated that 53 of the responding staff members were experiencing medical problems or discomfort.

"...staff and students at the Hampton Avenue School in particular began experiencing respiratory and other health-related discomfort during the 1990 to 1992 school years. The intensity of discomfort for the staff and students last year, school year, was a deplorable, intolerable act by the Town of Brookhaven."

"I ask that you consider the health risks of all these small children going to these schools."

"I would like to read excerpts from an informal survey that was done yesterday and today among the staff of our building. This is an informal survey: "Do you suspect that working next to the landfill has started or increased allergies, headaches, et cetera?"

"I've never seen more children out in the playground involved with asthma attacks, shortness of breath."

3.2.2 Response

As noted in Response 3.2.1, the NYSDEC has concluded that measured levels of hydrogen sulfide gas in the ambient air in the vicinity of the landfill are not a health concern. It should also be noted that the informal health survey conducted at the Hampton Avenue School was structured in a way which biased the survey results. Suffolk County Health Department Director, Dr. Mafhous Zaki noted that the health survey conducted at the Hampton Avenue School was flawed because the response rate was only 30 percent. Dr. Zaki noted that if the response rate were "sixty, seventy percent or seventy-five percent . . . my recommendation would be totally different." He added that "Usually what happens in these surveys that involve subjective symptoms . . . the ones that usually respond are the ones with the symptoms" (See the transcript of the June 11, 1993 meeting, which is incorporated by reference into this FEIS, page 66).

Consequently, no scientifically supportable conclusions can be drawn from that study, and no direct link can be drawn between the various health conditions which were described and the presence of landfill gas in the ambient air.

Nevertheless, the Town understands the concern of the local community regarding potential health impacts, especially regarding potential impacts from the Existing Landfill to staff and children attending the Hampton Avenue School, and, therefore, supports and will cooperate with the study which Richard Kessel (Governor Cuomo's Ombudsman for the Brookhaven Landfill) requested (in December 1992) be conducted by the New York State Department of Health to investigate health conditions of students and staff. The Town is

attempting to schedule a meeting with the State Department of Health as a follow-up to the Town's meeting with the County Health Department on June 11, 1993.

3.2.3 Comment

Brookhaven Town, together with New York State and perhaps with Federal funds, should immediately initiate an ongoing epidemiological study of the incidence of cancer and neurological disorders in individuals who reside and work within a three-to four-mile radius of the landfill.

3.2.3 Response

Prior to commencing the preparation of the DEIS, the proposed scope of the DEIS was subject to public review and comment. During this public scoping process, no one suggested that the study suggested here should be undertaken. Ongoing studies of potential groundwater impacts (discussed in Response 3.3) and the requested health study at Hampton Avenue School (discussed in Response 3.2.2) have a more narrow focus than the three to four-mile radius of impact suggested by this Commentor. Pursuit of a broader geographic investigation, as proposed by this Commentor, would not be warranted unless the results of the more localized studies conclude that the Existing Landfill poses a significant health risk for a wider area. Results from the narrower studies will provide the basis for focusing on specific health concerns, if any, that are found to be attributable to the Existing Landfill.

As noted in Response 3.2.1, there is a proposed federally funded study of breast cancer on Long Island, but this study is not directly related to the Existing Landfill or the Landfill Expansion Area.

3.3 GROUNDWATER MONITORING/REMEDATION

3.3 COMMENT

Local citizens indicated a particular concern regarding the quality of water downgradient of the Existing Landfill and the remediation of any plume of contamination that may be detected through monitoring.

"There is a stream, Beaver Dam Creek, Carman's River, the Great South Bay, all in the path of groundwater flow. We feel that any pollution is bound to reach these waters in time, and so we feel that there should be more serious consideration given to this problem in the DEIS."

"Some people say I won't be able to continue using my well water."

3.3 RESPONSE

Potential impacts on water quality from the Existing Landfill were discussed in Section 3.2.1.3 of the DEIS (see Pages 3-24 and 3-25). These potential impacts have been the subject of numerous investigations. In addition, the Town has commenced a remediation program with the installation of one test well and two observation wells to address the mechanics of remediation of groundwater contamination downgradient of the Existing Landfill. Previous investigations have shown no evidence supporting the suggestion that Beaver Dam Creek, Carman's River, the Great South Bay, or any local water supply wells are being adversely affected. Potential for future impacts will be further mitigated by the final closure of the Existing Landfill. Potential impacts associated with the proposed Landfill Expansion Area are discussed in Response 6.2.1. Upon completion of the pumping tests scheduled to take place in the near future, the Town will propose, for NYSDEC approval, an appropriate program for responding to the contaminated groundwater near the Existing Landfill. This program is independent of the Town's efforts to develop the Landfill Expansion Area.

The current status of the assessment program and remedial alternatives evaluation is presented in Appendix 6.

3.4 COVER MATERIAL

3.4 COMMENT

What is the quality of the cover soil utilized at the Existing Landfill and does it meet appropriate regulatory criteria?

"Sand is not a suitable cover material without having clay and loam mixed in with it."

3.4 RESPONSE

State solid waste management facility regulations allow any type of soil material to be used for daily cover and intermediate cover. There is no requirement that sandy soil must be mixed with clay and loam for use as daily or intermediate cover. State regulations only specify the allowable characteristics of soils used in the construction of the final cover.

6 NYCRR Part 360 sets forth the following definitions for cover soils to be used for operation and closure of landfills:

- **Daily Cover** - A minimum of six inches of compacted cover material must be applied on all exposed surfaces of solid waste at the close of each operating day to control vectors, fires, odors, blowing litter, and scavenging.
- **Intermediate Cover** - A minimum of 12 inches of compacted cover material must be applied and maintained on all landfill surfaces where no additional solid waste has been or will be deposited within 30 calendar days. The facility owner or operator may request department approval to remove all or a portion of the intermediate cover before placing an additional lift of solid waste if odors and blowing papers are effectively controlled on site. Intermediate cover is required if the ash is left exposed with no additional placement for more than one day.
- **Final Cover** - At a minimum, final cover must consist of a layered system meeting the following requirements: the bottom layer of final cover system must consist of a gas venting layer overlain by a low permeability barrier layer, a barrier protection layer, and a vegetated topsoil layer.

The on-site soils have been used at this site as cover material for operational cover and closure of the Existing Landfill, as well as for all overlayers. The Town also periodically uses clean C&D residue for operational daily cover. These materials have shown an ability to perform effectively for operational activities at the Existing Landfill. Also, these materials meet 6 NYCRR Part 360 requirements for final cover materials, except topsoil.

3.5 REAL ESTATE VALUES

3.5 COMMENT

Property values in proximity to the landfill have decreased as a result of the landfill presence and its ongoing/expanding operations.

"I think the Town Board should consider how this will affect the value of homes in all the surrounding areas."

"The Draft EIS does not address by viable appraisals; by contacting the practicing real estate brokers in the East Patchogue, Bellport, Brookhaven, Yaphank to get and ascertain how the built landfill as it exists has depreciated property values in the area;"

"I have the privilege - to look out on the dump and to smell the dump, but it's not very beneficial for the resale of my property."

3.5 RESPONSE

The commentators express the belief that the Existing Landfill has decreased the value of property in proximity to the landfill, but present no evidence to support this claim. The DEIS did not include a professional appraisal of the effect of the Existing Landfill on surrounding property values because the primary focus of the DEIS is on anticipated consequences of the Landfill Expansion, not the Existing Landfill. It is also worth noting that, during the public scoping process on the DEIS, no one suggested that a professional appraisal was a required element of the DEIS.

It should be noted that Existing Landfill pre-dates the closest residential development. The Landfill has been operating since 1973; the Horizon Village subdivision was constructed in 1978.

It is worth noting that the average value of a single family home in southeastern Suffolk County (Zone 25, which includes the Town of Brookhaven south of the Long Island Expressway, including the areas surrounding the Waste Management Facility Site) declined by 6.6 percent between 1989 and 1991. During this same period, the average price of a single family home in northeastern Suffolk County (Zone 28, which includes most of the

Town of Brookhaven located north of the Long Island Expressway) decreased by 8.5 percent (Long Island Board of Realtors, Multiple Listing Service). The commentators offer no data to document alleged decline in their property value or to differentiate the alleged decline from the general regional decline in property value noted above.

Four recent studies of the impact of landfills on surrounding property values suggest that properly operating landfills will not adversely affect property values. These four studies are summarized in Appendix 7.

In response to citizen concerns, however, the Town conducted a re-assessment of property in Horizon Village in May, 1992. At the direction of a Town Councilman, the Town's Chief Assessor reviewed the history of assessments in the Horizon Village area and the records of recent sales. These factors were taken into account as each property was considered and the assessment adjusted. The reassessment was not a fixed percent or even related to distance from the Existing Landfill. The intent was to adjust assessments, to take into account recent applicable area sales and recent individual reassessments.

Of the 113 properties re-assessed on May 15, 1992, 112 had their assessed value reduced. These reductions ranged from \$1,145 to \$60, and averaged \$428. One residential property experienced a \$25 net increase as a result of the re-assessment, but this may be a result of improvements made to this particular property.

Eighteen Horizon Village residents have filed a Notice of Claim with the Town, in which it is alleged that the operation of the Existing Landfill has diminished their property value. The Town is currently evaluating this Notice of Claim. To date, however, the claimants have not provided the Town with any evidence documenting their property value claims (e.g., no appraisal reports or studies).

3.6 RESOLUTION OF OPERATIONAL ISSUES

3.6.1 Comment

Several commentators spoke about other problems at the Existing Landfill, including management, visibility and litter. Some commentators thought the operational problems at the Existing Landfill Cell 4 should be resolved prior to initiating operations at the Landfill Expansion.

"The Existing Landfill is not properly managed and has caused the community extensive problems with odors."

Back up the statement that "no significant fugitive dust impacts have been experienced by the Town".

"If you have ever been to our landfill, you cannot miss the sight of papers plastered against the perimeter fence, with plastic bags and anything else that is not nailed down."

"The Town didn't build a landfill according to its legally adopted program."

3.6.1 Response

The odor problem experienced by the Existing Landfill has been discussed previously in Response 3.1.

With respect to fugitive dust or litter impacts from the Existing Landfill, the Department of Waste Management has received no formal complaints in this regard. Potential impacts from blowing litter are mitigated by operation of the transfer station at the Waste Management Facility Site. The NYSDEC maintains an on-site inspector at the Waste Management Facility Site. If the inspector notices a condition which requires correction, landfill operating personnel are notified and corrective action is taken. It should be noted that no formal Notices of Violation have been issued by the NYSDEC in connection with the management of dust, odor, litter, or aesthetic issues at the Existing Landfill.

The Existing Landfill has been constructed in accordance with plans submitted to the NYSDEC. The construction, operation and life expectancy of the Existing Landfill have always been regulated by the NYSDEC. Over time, changes to the original design of the Existing Landfill have been made, but these modifications have been approved by the NYSDEC. All of the changes to the design and construction of the Existing Landfill represent improvements to previously approved designs. For example, gas collection and groundwater monitoring programs were not required by the initial design, and a double composite liner has been installed under the currently utilized portion of the Existing Landfill.

3.6.2 Comment

Include description of on-going composting operation in area of Cell 5.

3.6.2 Response

The Town used a portion of the Landfill Expansion Area for temporary storage of leaves, but those leaves were removed from the site and delivered to the Town's Manorville Compost facility in February and March of 1993.

3.6.3 Comment

Include a contingency plan which the Town will follow if Cell 4 is filled before Cell 5 is on-line.

3.6.3 Response

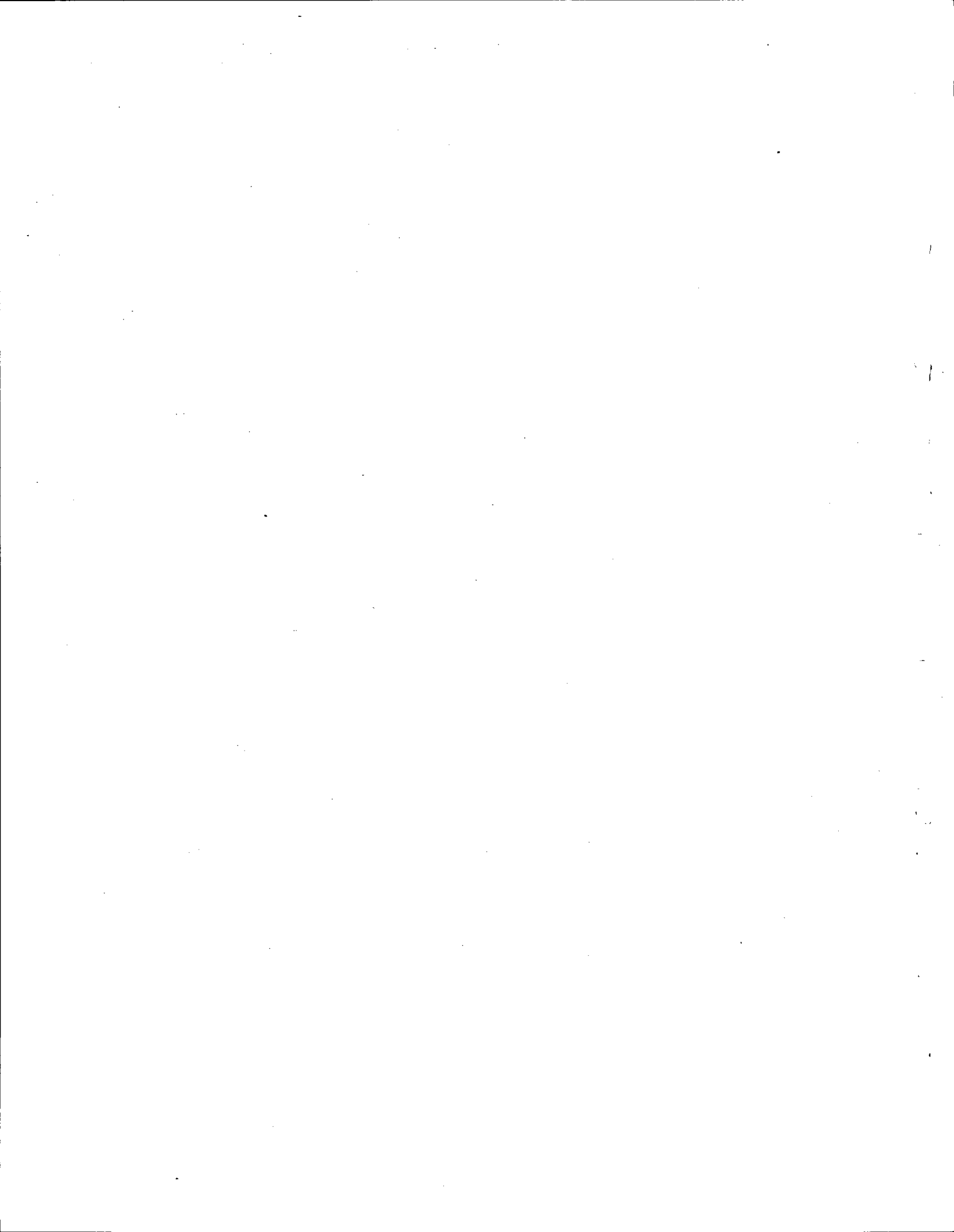
It is estimated that, as of March 1993, about 2.75 years of disposal capacity remains at Cell 4, assuming waste delivery rates exhibited in March 1993. As closure of Cell 4 becomes more imminent, certain waste streams, such as car shredder residue, can be excluded from Cell 4 to preserve capacity. Further, the Town is currently pursuing procurement of a compost facility, which will provide additional waste management capacity as of January 1995. Based upon the availability of compost facility capacity in January 1995, and a continuation of waste delivery rates exhibited during 1992 and 1993, it is not expected that, except for downtime waste, any unprocessed municipal solid waste would require land disposal after January 1995. Under these conditions, the only waste streams which would require land disposal are unprocessable waste and process residues from the MRF and ERF Ash from Hempstead. Under the NYSDEC Consent Order, which governs the Existing Landfill, these components of the waste stream may continue to be landfilled at the Existing Landfill until it reaches its final design elevation.

In the event that Cell 4 is completely filled before the proposed Landfill Expansion Area can be placed into service, the Town will continue to utilize the Hempstead ERF under terms of the IMA, but would need to make arrangements for out-of-Town disposal of the Town's unprocessable waste, MRF residue and other waste materials, excluding ERF Ash, that would otherwise need to be disposed of at Cell 4. Some of the MRF residue may be directed to the Hempstead ERF or the Composting Facility as part of the processible waste

stream. Under the IMA, the Town is not obligated to accept or arrange for ERF Ash disposal, if the occurrence of an uncontrollable circumstance causes the Town to be unable to accept ERF Ash at the Existing Landfill or the Landfill Expansion. This measure will be employed on a temporary basis, and was previously addressed in Response No. 2 of the Final Supplemental Generic Environmental Impact Statement (FSGEIS), and in the 1989 Plan and GEIS.

The recently negotiated modifications of the NYSDEC Consent Order which governs the Existing Landfill calls for the Town, by December 15, 1993, to submit to the NYSDEC, a contingency plan for the handling of waste during any interim period between closure of the Existing Landfill and commencement of the new composting service.

4.0 ECONOMIC ISSUES



4.0 ECONOMIC ISSUES

4.1 ADDITIONAL/DETAILED COST ESTIMATE

4.1 COMMENT

A more detailed overall cost estimate should be provided regarding the development of Cell 5. Additional information regarding specifically the costs of capping, landfill gas control, and monitoring should be provided.

"We do not think that the cost of the Landfill Expansion has been fully addressed. Are issues such as future capping of the landfill and methane collection systems included in the proposed cost of this Landfill Expansion?"

"The stated cost per ton for landfilling (in) the expansion area is given at \$24 a ton, which seems an unrealistic figure to us if all of the extensive monitoring that's presented in the documents are carried out as stated, and also since we believe that the current tipping fees of existing landfills are \$60 a ton."

"... the cost estimates for Cell 5 appear only to include construction costs, and to neglect monitoring costs during the life of the proposed landfill and during the 30-year post-closure monitoring period."

"...Nor does the DEIS include a discussion of the possible impacts of additional landfill construction, operation, and monitoring regulations. DEC is now redrafting its Part 360 solid waste management regulations...it is entirely possible that much more stringent provisions could be adopted that would substantially increase the costs of Cell 5. The DEIS would not be complete or adequate without a full discussion of the impact of these revised regulations."

"The full costs of the proposed Cell 5 must be examined, in addition to current landfill operation, closure, and monitoring costs, in order for

Brookhaven officials to accurately undertake the "economic markets" analysis required by Paragraph 120-aa if any changes in the Town's recycling program are proposed."

4.1 RESPONSE

The cost estimates for the Landfill Expansion Area presented in the DEIS were provided for the purpose of comparing alternatives. However, based on the comments, a more detailed evaluation of operations and post-closure costs has been performed. The costs associated with the construction and closure of the Landfill Expansion Area presented in the DEIS, and shown here in Table 4-1 represent detailed estimates, based upon the anticipated cost of site preparation, liner construction, the leachate removal system and the final cover. All costs are estimated based upon compliance with applicable regulatory requirements.

The cost of operations and post-closure care of the Landfill Expansion Area include only those costs directly associated with the Landfill Expansion; these costs would not be incurred if the Landfill Expansion Area is not constructed and operated. The annual costs for operations, presented in Table 4-2, include the cost of monitoring both air and groundwater, landfill gas collection, DEC monitoring, leachate transportation and disposal, as well as the direct operational costs of the landfill. A 25 percent contingency has been added to cover uncertainties in the line item costs, as well as unanticipated potential costs, that may be incurred.

The post-closure cost estimates include the costs of groundwater monitoring, cap maintenance, gas and leachate collection system maintenance and repairs, as well as engineering fees. These costs are presented in Table 4-3.

The estimated cost of \$24 per ton to develop and operate the Landfill Expansion Area cannot be directly compared to the tipping fee at the Waste Management Facility Site which is currently \$70 per ton. This is because, in addition to the cost associated with operation and closure of the Existing Landfill, the tipping fee raises revenue to pay for a number of Town waste management activities, including, but not limited to:

- Material Recovery Facility
- Appliance pick-up

TABLE 4-1
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
CONSTRUCTION COST ESTIMATE

CONSTRUCTION SEQUENCE	APPROX. BASELINER AREA (AC)	APPROX. FINAL COVER (AC)	AIRSPACE VOLUME (C.YD.)	(1)	(2)	(3)	(4)	(5)			TOTAL COST (\$)
				SITE PREPARATION COST (\$)	BASELINER CONSTRUCTION COST (\$)	LEACHATE REMOVAL SYSTEM COST (\$)	FINAL COVER COST (\$)	SUBTOTAL (\$)	QA/QC COST (\$)	CONTINGENCY @ 10% (\$)	
Phase 1	11.9	0.0	0	995,000	4,780,000	55,000	0	5,810,000	581,000	581,000	6,972,000
Phase 2	4.9	3.5	732,530	200,000	1,980,000	55,000	448,000	2,663,000	266,300	266,300	3,195,600
Phase 3	5.0	4.9	625,290	250,000	2,000,000	55,000	627,200	2,932,200	293,220	293,220	3,518,640
Phase 4	5.1	5.0	709,930	300,000	2,040,000	55,000	640,000	3,035,000	303,500	303,500	3,642,000
Phase 5	5.2	5.1	830,170	350,000	2,080,000	55,000	652,800	3,137,800	313,780	313,780	3,765,360
Phase 6	5.3	5.2	1,059,000	400,000	2,120,000	55,000	665,600	3,240,600	324,060	324,060	3,888,720
Phase 7	5.5	5.3	1,155,000	500,000	2,180,000	55,000	678,400	3,413,400	341,340	341,340	4,096,080
Phase 8	5.6	5.5	1,155,920	600,000	2,240,000	55,000	697,600	3,592,600	359,260	359,260	4,311,120
Phase 9	7.1	6.8	1,159,800	600,000	2,840,000	55,000	718,800	4,211,800	421,180	421,180	5,054,160
Phase 10 (Phase 9 Closure)	0.0	16.0	1,514,890	0	0	0	2,048,000	2,048,000	204,800	204,800	2,457,600
Total	56.8	56.1	8,942,530	4,195,000	22,220,000	495,000	7,174,400	34,084,400	3,408,440	3,408,440	40,901,280

Notes:

- (1) Site preparation cost includes excavation, clearing and grubbing, and top soil stripping costs. In addition, Phase 1 site preparation cost includes cost for perimeter access road, culverts, pump station and force main, Basin A excavation, and gas transfer line.
- (2) Baseline construction cost is estimated based on a unit cost of \$400,000/acre.
- (3) Leachate removal system cost is a lumped sum cost for the construction of the collection sumps, sizerisers, valve chamber, pumps, valves and discharge lines.
- (4) Final cover cost is estimated based on a unit cost of \$128,000/acre.
- (5) QA/QC cost which includes costs for engineering certification, lab testing, and surveying, is estimated at 10% of subtotal cost.
- (6) Total cost for each phase is based on 1992 dollars.
- (7) Unit costs based on recent construction bids means guide, or price quotes at similar facilities.

**TABLE 4-2
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
OPERATIONS COST ESTIMATE**

<i>Item</i>	<i>Estimated Yearly Cost (\$)</i>
I. LABOR	
- 2 Foreman	80,740
- 1 Master Mechanic	34,584
- 1 Assistant Mechanic III	36,685
- 1 Assistant Mechanic I	35,606
- 7 Heavy Equipment Operator	256,795
- 9 Construction Equipment Operator	380,546
- 7 Laborers	227,382
- 8 Part-Time Labor	52,000
<i>Total Labor</i>	\$1,104,338
Assume 40% fringes, etc. (Cost of Labor and Fringes associated with Landfill)	\$1,546,073
II. OTHER COSTS (per year)	
- Air Monitoring	180,000
- Leachate disposal	210,000
- Leachate Transportation	150,000
- NYS Monitor	50,000
- Laboratory Services/Groundwater Monitoring	100,000
- Repair and Maintenance for Equipment	150,000
- Depreciation on Equipment (est.)	1,000,000
- Engineering, Environmental and Regulatory Compliance	200,000
- Prorated 5 Year Renewal Fees	100,000
<i>Total Others</i>	\$2,140,000
Total at 25% Contingency	\$4,607,592

**TABLE 4-3
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
POST-CLOSURE COST ESTIMATE**

Item	Year 1 2012	Year 2 2013	Year 3 2014	Year 4 2015	Year 5 2016	Year 6 2017	Year 7 2018	Year 8 2019	Year 9 2020	Year 10 2021	11 to 30 2022 to 2042	Total
Groundwater Monitoring (3)	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$3,000,000
Final Cover Repair (4)	\$358,720	\$358,720	\$358,720	\$215,232	\$143,488	\$71,744	\$71,744	\$71,744	\$71,744	\$71,744	\$0	\$1,793,600
Fertilizing (5)	\$6,440	\$6,440	\$6,440	\$6,440	\$6,440	\$6,440	\$6,440	\$6,440	\$6,440	\$6,440	\$0	\$64,400
Mowing (5)	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$15,881	\$476,431
Monitoring Well Inspection and Repair (5)	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$72,000
Gas Collection System Maintenance and Repair (6)	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	\$1,200,000
Leachate Collection System Operation, Maintenance, Inspection and Cleaning (5)	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$62,700	\$1,881,000
Engineering Inspection and Certification (6)	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$291,000
TOTALS(\$)	\$595,841	\$595,841	\$595,841	\$452,353	\$380,609	\$308,865	\$308,865	\$308,865	\$308,865	\$308,865	\$230,681	\$8,778,431

- NOTES: (1) All costs are in 1993 dollars.
(2) Costs are constant from year 11 to 30.
(3) Cost provided by Dvirka and Bartilucci.
(4) Cost based on percent of final cover construction cost.
(5) Cost based on 1992 Means Guide.
(6) Cost based on 1992 Wehran Fee Experience.

- STOP program for household hazardous waste
- Funding of on-site NYSDEC inspector
- Roadside litter collection
- Capital projects
- Transfer station operations
- Recycling education programs
- Public education about all of the Department of Waste Management programs

The following is a summary of the estimated costs associated with landfilling at the Landfill Expansion:

• Construction Costs		
	Includes Site Preparation, Baseline, Leachate Removal System, and Final Cover Costs (see Table 4-1)	\$40,900,000
• Air Monitoring Start-up		\$120,000
• Operations Costs		
	Includes Cost for Labor, Leachate Removal, Laboratory Services, Equipment, Consultant and other Operating Costs (see Table 4-2)	\$82,900,000
• Post-Closure Costs		
	Includes Costs for Monitoring, Repairing, and Inspection for Groundwater, Final Cover, Leachate Collection System, and Engineering Certification (see Table 4-3)	<u>\$8,800,000</u>
	Subtotal	\$132,720,000
	20% Contingency	<u>\$26,500,000</u>
	TOTAL	\$159,220,000

The total cost of \$159.2 million reflects an estimated cost in 1993 dollars. The actual cost will occur over an anticipated 18 years of operational life, and a 30-year post-closure period. The cost per incoming waste tonnage can be calculated based on Table 4-4 assumptions:

TABLE 4-4
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
SITE CAPACITY

Phase Number	Air-Space¹ Net Volume (CYD)	Estimated² Life (Years)
1	480,000	1.0
2	663,000	1.4
3	870,000	1.8
4	965,000	2.0
5	995,000	2.0
6	1,025,000	2.1
7	1,052,000	2.2
8	1,076,000	2.2
9	1,524,000	3.1
Total	8,650,000	-18 yrs

Notes:

1. Air space net volume includes deduction for baseliner system.
2. Estimated life based on the following:
 - Ash flow rate - 630 tons/day (density - 2,500 lb/cyd)
 - Residue flow rate - 615 tons/day (density - 1,250 lb/cyd)
 - Estimated life reflects 10% (ash) and 15% (residue) contingencies for daily/interim cover, berms and final cover
 - 300 operating days per year

- Incoming daily waste of 1,245 tons
- 300 operating days per year
- 18 years of operational life based on available value of 5.0 mcy

$$\begin{aligned} \text{Cost/Ton} &= \$159.2 \text{ million (1,245 ton/day) (300 days/year) (18 years)} \\ &= \$24/\text{ton} \end{aligned}$$

This estimated cost per ton is consistent with the cost of \$24/ton presented in the DEIS. This is less than the \$45/ton cost presented in Table 2.7.-1 of the 1991 Update/GEIS. This \$45/ton figure represented a conservative, preliminary estimate made at that time without the benefit of engineering plans, quantity estimates, contract costs, etc. In addition, the previous estimate of \$45/ton reflects other cost items not directly associated with the expansion, such as scale operation, and overall management. These other costs are not properly allocated to the expansion because these will be incurred even if the Landfill Expansion Area is not built.

It must be noted that the potential exists for increases in these costs due to regulatory changes. The recent enactment of revisions to the Part 360 regulations do not, however, impact the cost estimates for design construction, operation, closure or post-closure maintenance of the Landfill Expansion Area in any significant way. The regulatory revisions generally require the construction of increased leachate storage capacity (increasing from 30 days capacity to 90 days), but allow the NYSDEC to approve leachate storage capacity which is less than 90 days, if warranted, based upon the specific circumstances of the project. The estimated capital cost of the additional storage capacity is on the order of \$2 million. This estimated cost is well within the range of contingency costs included above. The inclusion of contingencies in the cost estimates helps to safeguard against potential unanticipated adverse impacts from unforeseen regulatory changes or other unforeseeable circumstances.

4.2 ALTERNATIVE DISPOSAL COST COMPARISONS

4.2.1 Comment

Cost evaluations should be provided for a smaller site versus the proposed 18-year Cell 5.

"Nowhere is this decrease in diseconomies associated with the downsizing of the landfill reflected in the cost calculations. We ask that this DEIS be considered incomplete until such calculations are fully considered."

"It's hard to see that a smaller scaled-down project will cost more than a larger, more ambitious one."

4.2.1 Response

As noted below, the total cost to develop and operate a 13-year Landfill Expansion is about \$113 million, which is less than the \$159 million estimated total cost of the proposed Landfill Expansion Area. However, on a cost-per-ton basis, the proposed Landfill Expansion Area is more cost effective than a smaller 13-year landfill expansion; \$24/ton compared to \$29/ton, respectively.

Additional information on the estimated cost for the 13-year Landfill Expansion is presented below.

Estimated costs for Landfilling at Town of Brookhaven 13-Year Landfill Expansion

•	Construction Costs	
	Includes Site Preparation, Baseline, Leachate Removal System, and Final Cover Costs (see Table 4-5)	\$29,200,000
•	Air Monitoring Program Start-up	\$120,000
•	Operations Costs	
	Includes Cost for Labor, Leachate Removal, Laboratory Services, Equipment, Consultant and other Operating Costs (see Table 4-6)	\$57,200,000
•	Post-Closure Costs	
	Includes Costs for Monitoring, Repairing, and Inspection for Groundwater, Final Cover, Leachate Collection System, and Engineering Certification (see Table 4-7)	<u>\$7,500,000</u>
	Subtotal	\$94,020,000
	20% Contingency	<u>18,780,000</u>
	TOTAL	\$112,800,000

**TABLE 4-5
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
CONSTRUCTION COST ESTIMATE
FOR 13-YEAR LANDFILL EXPANSION**

CONSTRUCTION SEQUENCE	APPROX. BASELINER AREA (AC)	APPROX. FINAL COVER (AC)	AIRSPACE VOLUME (C.YD.)	(1)	(2)	(3)	(4)	(5)			TOTAL COST (\$)
				SITE PREPARATION COST (\$)	BASLINER CONSTRUCTION COST (\$)	LEACHATE REMOVAL SYSTEM COST (\$)	FINAL COVER COST (\$)	SUBTOTAL (\$)	QA/QC COST (\$)	CONTINGENCY @ 10% (\$)	
Phase 1	14.5	0.0	1,140,000	995,000	5,900,000	55,000	0	6,950,000	695,000	695,000	8,220,000
Phase 2	8.7	7.0	1,285,000	809,000	3,480,000	55,000	898,000	5,040,000	504,000	504,000	6,048,000
Phase 3	9.0	7.9	1,330,000	830,000	3,600,000	55,000	1,011,200	5,296,200	529,620	529,620	6,355,440
Phase 4	7.6	8.9	1,250,000	832,000	3,040,000	55,000	1,139,200	4,766,200	476,620	476,620	5,719,440
Phase 5 (Phase 4 Closure)	0.0	18.2	0	0	0	55,000	2,329,600	2,384,600	238,460	238,460	2,861,520
Total	39.8	42.0	5,005,000	2,766,000	15,920,000	275,000	5,378,000	24,337,000	2,433,700	2,433,700	29,204,400

Notes:

- (1) Site preparation cost includes excavation, clearing and grubbing, and top soil stripping costs. In addition, Phase 1 site preparation cost includes cost for perimeter access road, culverts, pump station and force main, Basin A excavation, and gas transfer line. \$70,000/acre used for phases 2, 3, and 4.
- (2) Baseline construction cost is estimated based on a unit cost of \$400,000/acre.
- (3) Leachate removal system cost is a lumped sum cost for the construction of the collection sumps, sizer/sear, valve chamber, pumps, valves and discharge lines.
- (4) Final cover cost is estimated based on a unit cost of \$128,000/acre.
- (5) QA/QC cost which includes costs for engineering certification, lab testing, and surveying, is estimated at 10% of subtotal cost.
- (6) Total cost for each phase is based on 1992 dollars.
- (7) Unit costs based on recent construction bids means guide, or price quotes at similar facilities.

TABLE 4-6
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
OPERATIONS COST ESTIMATE
FOR 13-YEAR LANDFILL EXPANSION

<i>Item</i>	<i>Estimated Yearly Cost (\$)</i>
I. LABOR	
- 2 Foreman	80,740
- 1 Master Mechanic	34,584
- 1 Assistant Mechanic III	36,685
- 1 Assistant Mechanic I	35,606
- 6 Heavy Equipment Operator	220,110
- 8 Construction Equipment Operator	338,263
- 6 Laborers	194,899
- 7 Part-Time Labor	45,500
<i>Total Labor</i>	\$986,387
Assume 40% fringes, etc. (Cost of Labor and Fringes associated with Landfill)	\$1,380,942
II. OTHER COSTS (per year)	
- Leachate disposal	210,000
- Leachate Transportation	150,000
- NYS Monitor	50,000
- Air Monitoring	180,000
- Laboratory Services	100,000
- Repair and Maintenance for Equipment	150,000
- Depreciation on Equipment (est.)	1,000,000
- Engineering, Environmental and Regulatory Compliance	200,000
- Prorated 5 Year Renewal Fees	100,000
<i>Total Others</i>	\$2,140,000
<i>Total at 25% Contingency</i>	\$4,401,177

TABLE 4-7
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
POST-CLOSURE COST ESTIMATE
FOR 13-YEAR LANDFILL EXPANSION

Item	Year 1 2007	Year 2 2008	Year 3 2009	Year 4 2010	Year 5 2011	Year 6 2012	Year 7 2013	Year 8 2014	Year 9 2015	Year 10 2016	11 to 30 2017 to 2037	Total	
Groundwater Monitoring (3)	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$3,000,000	
Final Cover Repair (4)	\$268,800	\$268,800	\$268,800	\$161,280	\$107,520	\$53,760	\$53,760	\$53,760	\$53,760	\$53,760	\$53,760	\$0	\$1,344,000
Fertilizing (5)	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$4,830	\$0	\$48,300
Mowing (5)	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$11,911	\$357,323
Monitoring Well Inspection and Repair (5)	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$2,400	\$72,000
Gas Collection System Maintenance and Repairs (6)	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$1,200,000
Leachate Collection System Operation, Maintenance, Inspection and Cleaning (6)	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$1,200,000
Engineering Inspection and Certification (6)	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$9,700	\$291,000
TOTALS(\$)	\$477,641	\$477,641	\$477,641	\$370,121	\$316,361	\$262,601	\$262,601	\$262,601	\$262,601	\$262,601	\$262,601	\$204,011	\$7,512,623

- NOTES: (1) All costs are in 1993 dollars.
(2) Costs are constant from year 11 to 30.
(3) Cost provided by Dvirka and Barilucci.
(4) Cost based on percent of final cover construction cost.
(5) Cost based on 1992 Means Guide.
(6) Cost based on 1992 Wehran Experience.

The total cost of \$112,800,000 reflects an estimated cost in 1993 dollar value. The actual cost will occur over an anticipated 13 years of operational life, and during a 30 year post-closure period. As noted in the DEIS, incoming waste flows under this alternative reflect a reduction of 250 TPD associated with a reduction in the acceptance of C&D process residue. The cost per incoming waste tonnage can be calculated based on Table 4-8 assumptions:

- Incoming daily waste of 995 tons
- 300 operating days per year
- 13 years of operational life based on available value of 5.0 mcg

$$\begin{aligned}\text{Cost/Ton} &= \$112,800,000 / (995 \text{ ton/day}) (300 \text{ days/year}) (13 \text{ years}) \\ &= \$29/\text{ton}\end{aligned}$$

4.2.2 Comment

The cost of the proposed Cell 5 should be evaluated against other alternative waste handling methods.

"We need first to begin to recycle commercial waste, incorporate a "Don't Bag It" program, in order to have a true evaluation of the cost."

"We need to explore other environmentally sound alternatives to effectively dispose our waste."

4.2.2 Response

The costs of alternative waste handling methods have been presented in each of the Generic Environmental Impact Statement (GEIS) documents as part of the development of the Town's Solid Waste Management Plan (SWMP). The evaluation of alternative waste handling methods presented in the GEIS and SWMP documents remains valid. The details of the most recent economic evaluation of alternative methods of waste handling can be found in Section 3 of the Draft GEIS for the Town's SWMP (January 1991). All of these previously cited documents (DGEIS and DEIS) are incorporated by reference in this FEIS.

TABLE 4-8
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
SITE CAPACITY FOR 13-YEAR LANDFILL EXPANSION

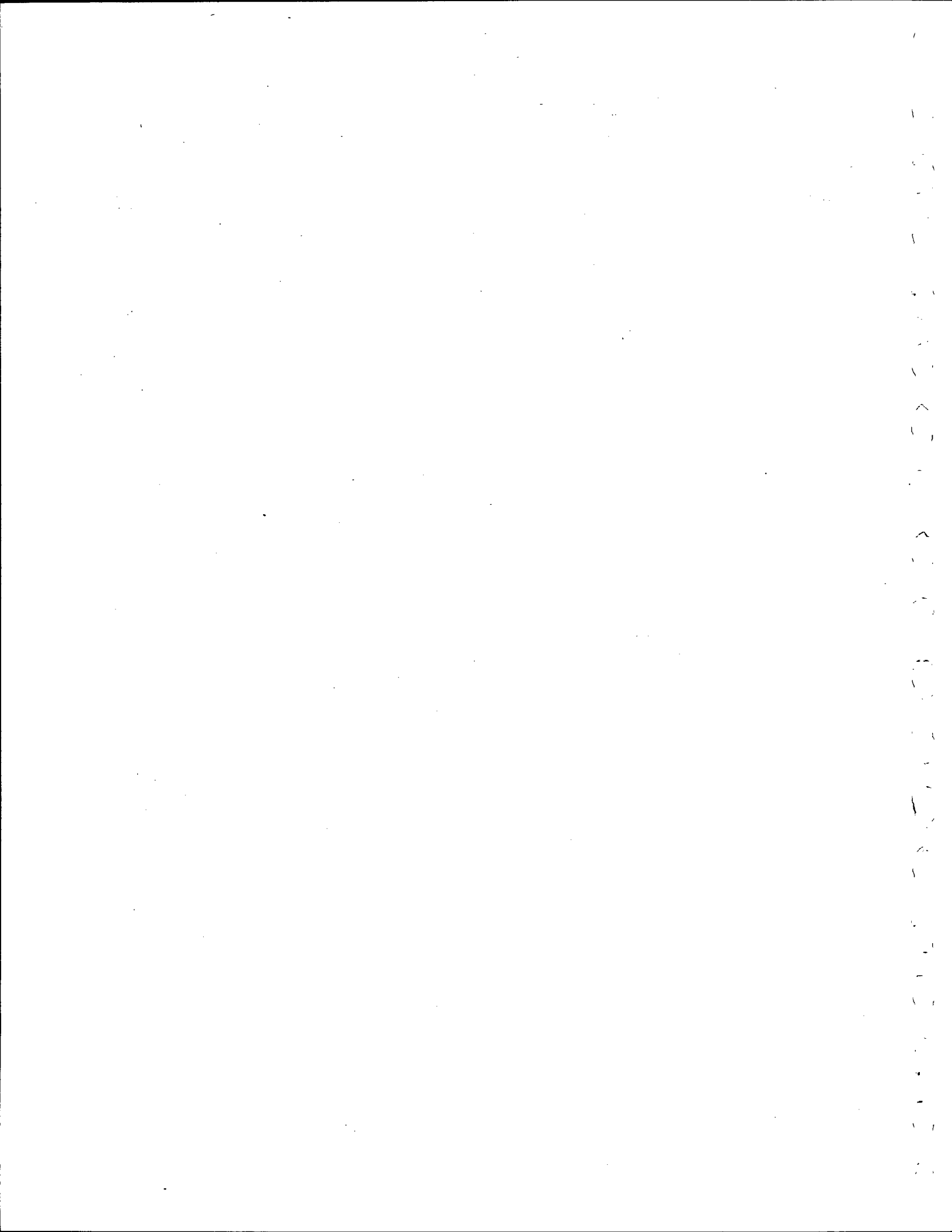
<i>Phase Number</i>	<i>Air-Space Net Volume (CYD)</i>	<i>Estimated Life (Years)</i>
1	1,140,000	2.96
2	1,285,000	3.34
3	1,330,000	3.45
4	1,250,000	3.25
Total	5,005,000	12.99

Notes:

1. Net volume includes deduction for final cover.
2. Estimated life based on the following:
 - Ash flow rate - 630 tons/day (density - 2,500 lb/cyd)
 - MSW waste rate - 365 tons/day (density - 1,200 lb/cyd)
 - 300 operating days per year

The purpose of this site-specific Environmental Impact Statement for the Landfill Expansion Area, which was called for in the GEIS, is to evaluate only the alternatives pertaining to the proposed Landfill Expansion. These alternatives included other sites, variation in design, alternative size and technology, and schedules. The economic impacts of landfill size were presented in Section 7.3 of the DEIS and in Responses 4.1 and 4.2.1.

It also should be remembered that the only wastes to be disposed of in the Landfill Expansion Area will be wastes that are either unprocessable in the Town's recycling, composting, and resource recovery programs, downtime wastes, or process residues. The tonnages projected assume complete success in meeting the Town's aggressive waste reduction and recycling goals. Thus, contrary to the implicit suggestion in the comments, the per-ton cost projections are not biased toward lower costs.



5.0 HOST COMMUNITY BENEFIT ISSUES

This "performance gap" was recognized by both professional and regulatory bodies operating in the area of landfill design, and a significant level of effort has been expended since the mid-1980's to determine what levels of performance can be achieved, and to improve landfill liner designs.

As a result of this effort, composite liner systems are now required in New York State; such a system has been proposed for the Landfill Expansion Area. The performance of composite liner systems has been both predicted, based on theoretical consideration, and measured in the field.

The landfill liner system proposed for the Landfill Expansion Area incorporates an improvement to the standard double composite liner provided in 6 NYCRR Part 360. The substitution of a prefabricated bentonite mat for the upper foot of the primary clay layer, as depicted in Figure 2-6 of the DEIS, will serve to improve the performance of the composite liner system, and represents an additional measure of mitigation to avoid potential adverse impacts. The lower permeability of the bentonite matting placed directly against the primary membrane will be more effective in reducing leakage through any holes or flaws that occur within the primary membrane, especially when a bentonite flexible membrane liner/geosynthetic clay liner is utilized.

In addition to the improvements in the design of the liner systems, the level of quality control that will be utilized in the construction of the liner system for the Landfill Expansion Area will be significantly greater than the level used for most of the Existing Landfill; the overliner beneath Cell 4 employed a similar high level of quality control for construction. A great deal of attention will be paid to every aspect of liner construction to ensure performance is achieved. After construction of each phase is complete, monitoring of the rate of liquid collection in the secondary system will be performed to demonstrate that the primary system is functioning to the level required. (See also Response 6.1.2 for discussion of anticipated leakage and Responses 6.2.1 through 6.2.9 for discussion of potential impacts to groundwater).

The liner system proposed for the Landfill Expansion Area is a proven and reliable design that represents a great improvement over past State-of-the-Art liners. This same conclusion has been reported by Robert Phaneuf, P.E. of the NYSDEC in his paper entitled Part 360 Liner System Overview and Performance Update: "The new landfills constructed with double composite liner systems in New York State are operating as well or better than

anticipated. More than anything else, this will begin to convince the public that landfills are environmentally safe and have no relation to the open dumps of the past."

6.1.2 Comment

On Page 4-5 the DEIS states refer to "...anticipated leakage rates..." for the proposed containment system. Is it expected there will be some leakage from the liner/leachate containment system and if so what are the anticipated numerical rates?

"How much leachate will penetrate the liner based on the permeability factor associated with that liner?"

6.1.2 Response

Studies have demonstrated that double composite liner systems, constructed with a reasonable level of quality control, achieve performance levels several orders of magnitude better than previously used liner systems. In his paper entitled Part 360 Liner System Overview and Performance Update, Robert Phaneuf, P.E., of the NYSDEC, provides the following estimates of predicted liner performance:

Leakage Type	Leakage in Gallons Per Acre Per Day
1. Single Clay Liner, 2 feet thick $k_s = 1 \times 10^{-7}$ cm/sec	138.4
2. Single Geomembrane Liner 1 hole/acre = 1 cm ²	3,300
3. Single Composite Liner $k_s = 1 \times 10^{-7}$ cm/sec; 1 hole/acre = 1 cm ²	0.8

As can be seen, the liner system that will be used for the Landfill Expansion Area has a predicted performance, if only the upper composite layer is considered, more than 1,000 times more effective than the single liner system underlying Cell 1 of the Town's Existing Landfill.

Actual performance of the composite liner systems is also presented in the Phaneuf paper for five landfill cells in New York State. The water collected in the secondary collection systems at these cells varied from 7.5 to 12.0 gallons per acre per day. The liquid collected included water squeezed from the clay layer of the composite liner as a result of the loads impacted by the wastes that were placed in the cells. The quantity of consolidation water has often been predicted as approximately equal to the rate of collected leakage for these composite systems (Bonaparte * Gross, Field Behavior of Double Liner Systems).

Leakage rates from the liner system to be utilized at the Landfill Expansion Area will be within the range predicted for composite liner systems as set forth in these studies. The anticipated leakage rate, referred to on Page 4-5 of the DEIS, can be conservatively estimated based on the Action Leakage Rate (ALR) from the primary composite liner system. The ALR is measured in the secondary leachate collection system and is a limit at which point an assessment must be made regarding the need to implement contingency measures. Assuming an ALR of 20 gallons-per-acre-per-day, it is expected that leakage through the secondary liner system would be no more than 1 gallon-per-acre-per-day. Under a more probable assumption of less than 1 gallon-per-acre-per-day leakage through the primary liner, leakage through the secondary liner would be less than one-tenth of a gallon-per-acre-per-day.

6.2 POTENTIAL IMPACTS ON GROUNDWATER

6.2.1 Comment

The DEIS suggests that, since water downgradient of the expansion is already damaged, further pollution is of no consequence. Groundwater contamination from the Existing Landfill should not be a mitigating factor in identifying the potential impacts of the new landfill cell development.

"In the second-to-last paragraph of this section [second to last paragraph of 4.2.1.2 on Page 4-4], the DEIS states the "...potential impact to the existing groundwater quality is limited' because existing groundwater quality has already been impacted by the Existing Landfill." This statement is questioned because it appears to discount the seriousness of any

groundwater contamination. It is recommended this statement be removed from the FEIS."

"The thought is expressed that since water downgradient of the expansion is already downgraded, that further pollution is not of consequence. There is a stream, Beaver Dam Creek, Carman's River, the Great South Bay, all in the path of groundwater flow. We feel that any pollution is bound to reach these waters in time, and so we feel that there should be more serious consideration given to this problem in the DEIS."

6.2.1 Response

The referenced statement was not intended to discount or minimize the seriousness of any groundwater contamination resulting from operation of the Existing Landfill or any potential contamination from the proposed Landfill Expansion Area. Groundwater quality conditions downgradient of the Existing Landfill are monitored regularly through the groundwater assessment program conducted by the Town. Remediation technologies are currently being evaluated through development of a closure investigation and closure plan. The closure and remediation process will be supervised by the NYSDEC.

The Carman's River has been determined by the USGS to be the downgradient boundary of the shallow hydrogeologic system within which the Landfill Expansion site lies. In the event of significant containment failure at the Landfill Expansion Area, groundwater contamination could, at least theoretically, migrate southeasterly in the direction of groundwater flow and discharge from the shallow flow system into the Carman's River. However, the likelihood of such an occurrence is extremely small given the nature of the liner properties (See Response 6.1.1) and the quality control program that will be an integral part of the liner construction.

While horizontal groundwater flow velocity in the area of the Existing Landfill is on the order of one foot per day, groundwater of degraded quality migrating steadily at a rate of one foot per day would have arrived at Montauk Highway in eight years. The USGS documented the existence of degraded groundwater south of the Existing Landfill approaching Montauk Highway from groundwater samples collected in October through December 1982, approximately eight years after the Existing Landfill began operation in

1974. Results of the most recent groundwater assessment program (Update 1992) indicate that, in the nine years since the USGS first identified the contamination, degraded groundwater could not be confirmed to have migrated any farther than the point initially identified in 1982.

Potential impacts to groundwater from containment failure at the Landfill Expansion are discussed in the DEIS as catastrophic, or worst case, scenarios. Even if these were to occur, they would not, however, be expected to affect any greater area of contamination than that which is currently impacted by leakages occurring at the Existing Landfill. However, to mitigate and avoid any potential impacts to groundwater, the Operational Environmental Monitoring Plan for the Landfill Expansion Area will make it possible to detect containment failure or other leakages early.

6.2.2 Comment

It is recommended consideration be given to providing more detail in regard to potential contamination of groundwater. Based on past experience, this information could include rates of leakage, rate of flow of contaminants and potential concentrations of contaminants.

6.2.2 Response

As stated previously (See 6.1.1 Response), the upper composite layer (alone) of the Landfill Expansion Area has been demonstrated to be as much as 1,000 times more effective than the single liner system of Cell 1 of the Existing Landfill. Anticipated leakages are estimated to be on the order of tenths of a gallon per acre per day, or less.

Horizontal groundwater flow in the Upper Glacial aquifer is estimated to be 1.5 ft/day, and vertical flow is about 0.03 ft/day indicating predominantly horizontal flow in this aquifer. In addition, there is a semi-confining unit between the Upper Glacial aquifer and Magothy aquifer which further retards the vertical flow of contaminants into deeper formations. Based on data obtained during the Landfill Expansion Hydrogeologic Investigation, the vertical flow rate in the upper portion of the Magothy aquifer was calculated using slug test results to be 6.5×10^{-4} ft/day or 0.25 ft/year, which significantly slows vertical contaminant migration into the Magothy aquifer in the vicinity of the Landfill

Expansion Area. Similar to the Upper Glacial aquifer, flow in the Magothy is primarily horizontal.

With regard to contaminant flow rates, although some highly soluble contaminants, such as chloride, migrate at about the same rate as groundwater, most contaminants migrate at lower rates because they are less soluble and/or they adsorb onto sediment and organic material. These less soluble contaminants include metals which would not migrate readily. In order to mitigate and avoid any potential groundwater contamination, the Landfill Expansion groundwater monitoring program is designed to detect any leachate contaminants quickly enough to allow appropriate response measures to be undertaken, if required.

6.2.3 Comment

There will be impacts to the groundwater in the vicinity of the landfill. No quantitative data or analysis has been provided to show the new Cell 5 is not in the deep flow recharge zone.

"We...assert that the expansion of Cell 5 rather than protect the public health and environment serves instead to threaten their further deterioration. We ...object to the expansion of Cell 5 on the grounds that it does not fulfill the intent of the 1983 Landfill Closure Law, i.e., to protect our aquifers from contamination. . . . Adopt a solid waste management plan which strives to maximize protection of the public health and environment, and whose primary goal is the protection of our aquifers."

"We are especially concerned about groundwater protection. The Yaphank Taxpayers & Civic Association has always maintained the possibility that the Brookhaven Landfill is sited over deep-flow recharge area Hydrogeological Zone 3. Referring to:

- (a) Discussion of Hydrogeologic Zone Boundaries in the Vicinity of South Yaphank, Long Island, New York, by Charles J. Voorhis, Director, Division of Environmental Protection, report dated January 30, 1986.

- (b) Evaluation of Hydrogeologic Data in the Vicinity of the Proposed Regional Ashfill at Yaphank and the Brookhaven Landfill by Geraghty & Miller, report dated May 1986.
- (c) Geohydrological Investigation of the Regional Resource Recovery Ashfill Site at Yaphank by Dr. Kevin Phillips, report dated February 1986.

All three reports conclude that speculation on the recharge-discharge zone boundaries in the landfill vicinity further justifies the procurement of additional data. Until this contention is proven once and for all, we feel this expansion should not go forth."

6.2.3 Response

The NYSDEC has determined that neither the Existing Landfill or the Landfill Expansion Area are in the deep flow recharge area. A letter of determination from NYSDEC Regional Director, Raymond Cowen, is presented in Appendix 20. A November 1990 letter from NYSDEC Executive Deputy Commissioner, Langdon Marsh, which confirmed that the Existing Landfill is outside the deep flow recharge area, is also presented in Appendix 20.

One commentor cites three reports which, it claims, conclude that speculation on the recharge-discharge zone boundaries in the vicinity of the landfill justifies the procurement of additional data. None of these three reports make any statement that the collection of further data is justified. A summary discussion of these three reports is presented in Appendix 8 of this FEIS. All three reports place the Existing Landfill and the Landfill Expansion Area south of the deep flow Magothy recharge area boundary, in an area of discharge to the Upper Glacial aquifer. The Hydrogeologic Investigation Report, which is included as part of the permit application, and incorporated in this FEIS by reference, also concludes that the Landfill Expansion Area is south of the deep flow recharge area. See also Response 8.2.4.

No further data or study is necessary in order to conclude with a reasonable degree of scientific certainty that the Landfill Expansion Area is not in the deep flow recharge area.

6.2.4 Comment

Potential Influence on Station Road Well Field. Pumping tests performed at the Suffolk County Station Road Well Field included only wells which pump from the upper glacial aquifer, and do not address the consequence of high volume pumping from the Magothy in proximity to the landfill.

6.2.4 Response

The Magothy aquifer water supply well (well S-49018) located at the Station Road Wellfield is set at 518 feet below the ground surface (-448 feet mean sea level [msl]). The effective screen length for this well is approximately 60 feet long.

The stratigraphic log for well S-49018 indicates that two separate significant semi-confining units exist in the Magothy formation between the top of the well screen (-385 feet msl) and the base of the Upper Glacial aquifer (-89 feet msl). The thickness of these units and their elevations are listed below in descending order.

<u>Semi-confining Unit</u>	<u>Thickness (feet)</u>	<u>Elevation (msl)</u>
1	16	-238 to -250
2	20	-298 to -322

Together, these units represent 36 feet of semi-confining material between the base of the Upper Glacial aquifer and the Magothy well in the Station Road Wellfield.

Results from aquifer tests performed by the Suffolk County Water Authority (SCWA) and its consultants, Leggette, Brashears and Graham, Inc., in July 1992 as part of a hydrogeologic investigation in support of this EIS, indicate that, even under highest pumpage conditions, the Upper Glacial water supply wells would not be impacted by a release of leachate from the Landfill Expansion because this area falls outside of their zone of capture. This factor, coupled with the relative absence of a downward vertical flow component in the area of the wellfield and landfill, and the presence of the significant confining layers between the landfill and the screened interval of the SCWA's magothy well, caused the SCWA and its consultant to conclude that the construction and operation of the Landfill Expansion would not pose a potential for impact to the Station Road Wellfield. The Executive Summary of the draft report entitled, "Evaluation of Zone of Contribution of the Station Road Wellfield with Respect to the Proposed Expansion of the Town of Brookhaven

Landfill," prepared by Leggette, Brashears and Graham, was presented in Appendix 14 of the DEIS and is incorporated by reference. The full text of the final report is included as Appendix F of the Hydrogeologic Investigation Report which is part of the Engineering Design Report prepared for the Part 360 application which is also incorporated by reference. A letter from Leggette, Brashears and Graham which directly responds to this comment is presented in Appendix 21. This letter concluded that,

"Based on these considerations, it was and remains our view that the existing landfill and the proposed Cell No. 5 constitute a minimal threat to Station Road Well 3, and that Cell No. 5 would not pose any more threat than the existing facility. As the Upper Glacial test and the resulting extrapolations indicate, the proposed Cell No. 5 is not within the zone of capture of Wells 1 and 2 in the Upper Glacial aquifer, even if operated at their full authorized capacity."

In addition to the pumping test results, and the presence of two semi-confining units in the Magothy formation, there are other factors which indicate that the construction and operation of the Landfill Expansion Area will not create the potential for groundwater contamination of the Station Road Magothy well.

As discussed in the DEIS, Sections 4.2.1.1. through 4.2.1.3, if a significant release of leachate from the landfill expansion were to occur, the leachate-derived constituents would migrate in a southeasterly direction along the natural groundwater flow pathway away from the Station Road Wellfield. Downward migration of the leachate-derived constituents would be mitigated by the absence of a sustained downward vertical flow component beneath the Landfill Expansion Area and the presence of an upward vertical flow component downgradient of the expansion.

The natural factors of the presence of two semi-confining units in the Magothy aquifer above the Magothy well, and predominantly horizontal flow beneath, and upward flow downgradient of the landfill, coupled with the aquifer test results obtained by the SCWA and their consultant, indicate that there is no potential for leachate-derived contaminants in the vicinity of the Landfill Expansion to migrate in a westerly direction and impact the zone of influence of any of the three SCWA water supply wells on Station Road, including the Magothy well.

6.2.5 Comment

On Page 3-25, the comments on groundwater supplies center on the source of water for the public water supply and residential wells. It is not correct to say that "groundwater" wells are typically screened 40 feet into the water table. If such comment is made, it should say "residential" wells.

6.2.5 Response

The comment is correct. The sentence should be changed to read:

"Residential wells are typically screened 40 feet into the water table."

6.2.6 Comment

In the section on groundwater (Regional Groundwater Regime - 3.2.1.1), it should be noted that recharge is vertical in the regime of the groundwater divide. However, rather than flowing horizontally north and south of the deep recharge area, it develops a horizontal component which increases as it gets further away from the divide.

6.2.6 Response

The following two paragraphs should be added to Section 3.2.1.1 of the DEIS, replacing the previous paragraph under the subsection entitled "Magothy Aquifer."

"Groundwater flow in the Magothy aquifer of Long Island moves in response to driving forces similar to those which direct the flow in the Upper Glacial aquifer. Recharge occurs predominantly in the region of the groundwater divide, where groundwater flows vertically downward to the Magothy aquifer.

Further to the north and south, the movement of groundwater is still primarily downward, however, with a minor component of horizontal flow. Still further to the north and south, the horizontal flow component increases while the downward flow component decreases until the downward flow component no longer exists and flow is dominated by horizontal movement. The point at which downward flow no longer predominates over horizontal flow (in a consistent manner) marks the boundary for deep flow recharge zone to the Magothy aquifer. Ultimately, the groundwater flow will develop an increasingly upward component as it nears the discharge areas."

6.2.7 Comment

The first and last sentences of paragraph one on Page 4-6 of the DEIS appear to be a contradiction and should be reconsidered.

6.2.7 Response

The last sentence of the first paragraph on page 4-6 of the DEIS is changed to read as follows: "As a result, there would be no significant decrease in total recharge over the course of the combined operational and post-closure life of the Landfill Expansion Area."

6.2.8 Comment

On pages 3-26 to 3-27, the DEIS discusses 'Groundwater Supplies' and notes the Part 360 survey requirements for locating public and private wells within one mile downgradient of the proposed site. Although on Page 3-26 only one private well is noted as being within the Part 360 boundary, according to Figure 3-14 there are a number of wells located just outside this boundary and which may be downgradient of Cell 5. Accordingly, it is recommended that the same consideration be given to these additional wells.

6.2.8 Response

On page 3-26 of the DEIS it was noted that only one private well could be verified as existing within the boundaries of the required Part 360 survey area, not that "...only one private well is noted as being within the Part 360 boundary..." as stated in this comment.

Since the completion and publication of the DEIS, no one has come forward to identify himself or herself as being a downgradient user of a private/commercial well which had not been previously enumerated as part of the above-noted study.

The reference in the DEIS to the regulatory requirement to identify downgradient wells within one mile of the Landfill Expansion Area should not be construed to mean that consideration is not given to wells outside of that boundary limit. The Contingency Water Quality Monitoring Plan for the Landfill Expansion may require, if conditions warrant, that residences and businesses downgradient of the facility, even if beyond the one-mile boundary, be notified of groundwater quality conditions in their area in the event that

conversion to public water supply becomes necessary as a result of operation of the Landfill Expansion.

6.2.9 Comment

In the discussion of 'Surface Water Quality' on Pages 3-30 to 3-31, the DEIS references sampling point BD-3 and states this point is also shown in Figure 3-22. A review of this figure finds that BD-3 is not shown, however.

6.2.9 Response

The comment is correct. Surface water sampling point BD-3 is located north of the intersection of Beaverdam Creek with South County Road. Figure 3-22 has been revised to include sampling point BD-3.

6.3 GROUNDWATER MONITORING/REMEDIATION

6.3.1 Comment

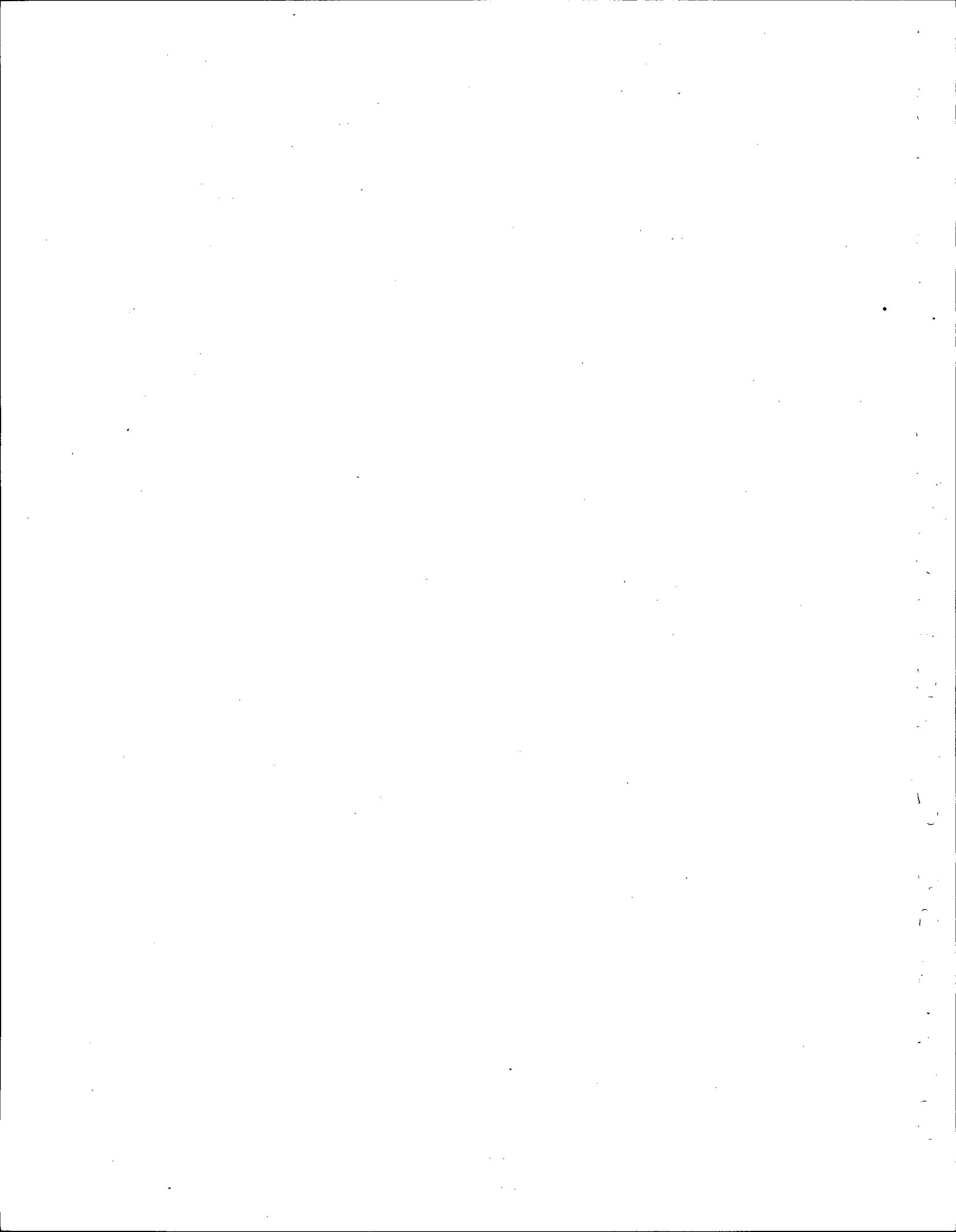
In the last paragraph of this section on Page 4-5, the DEIS states that groundwater monitoring wells will be sampled. It is recommended the FEIS indicate how often and at what times of year the wells will be sampled.

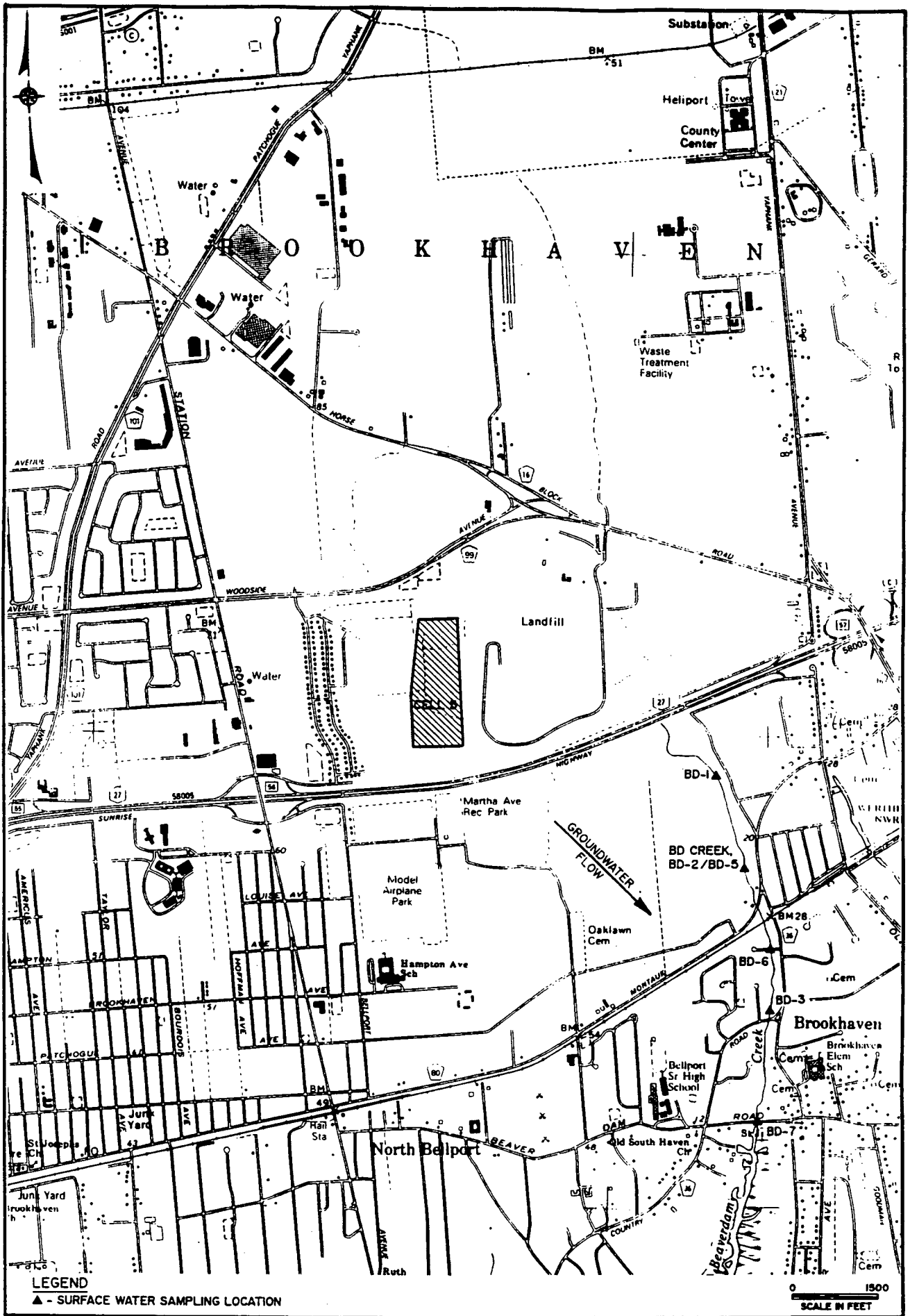
6.3.1 Response

Under the Part 360 regulations and as proposed in the Operational Water Quality Monitoring Plan for Cell 5, groundwater monitoring would be conducted quarterly at the Landfill Expansion Area. Normally this would be conducted once during each of the four seasons, with the NYSDEC Baseline Parameters being collected on a rotating quarterly basis, and NYSDEC Routine Parameters being collected during the remaining three quarters (6 NYCRR Section 360-2.11(c)(5)(ii)(a)).

6.3.2 Comment

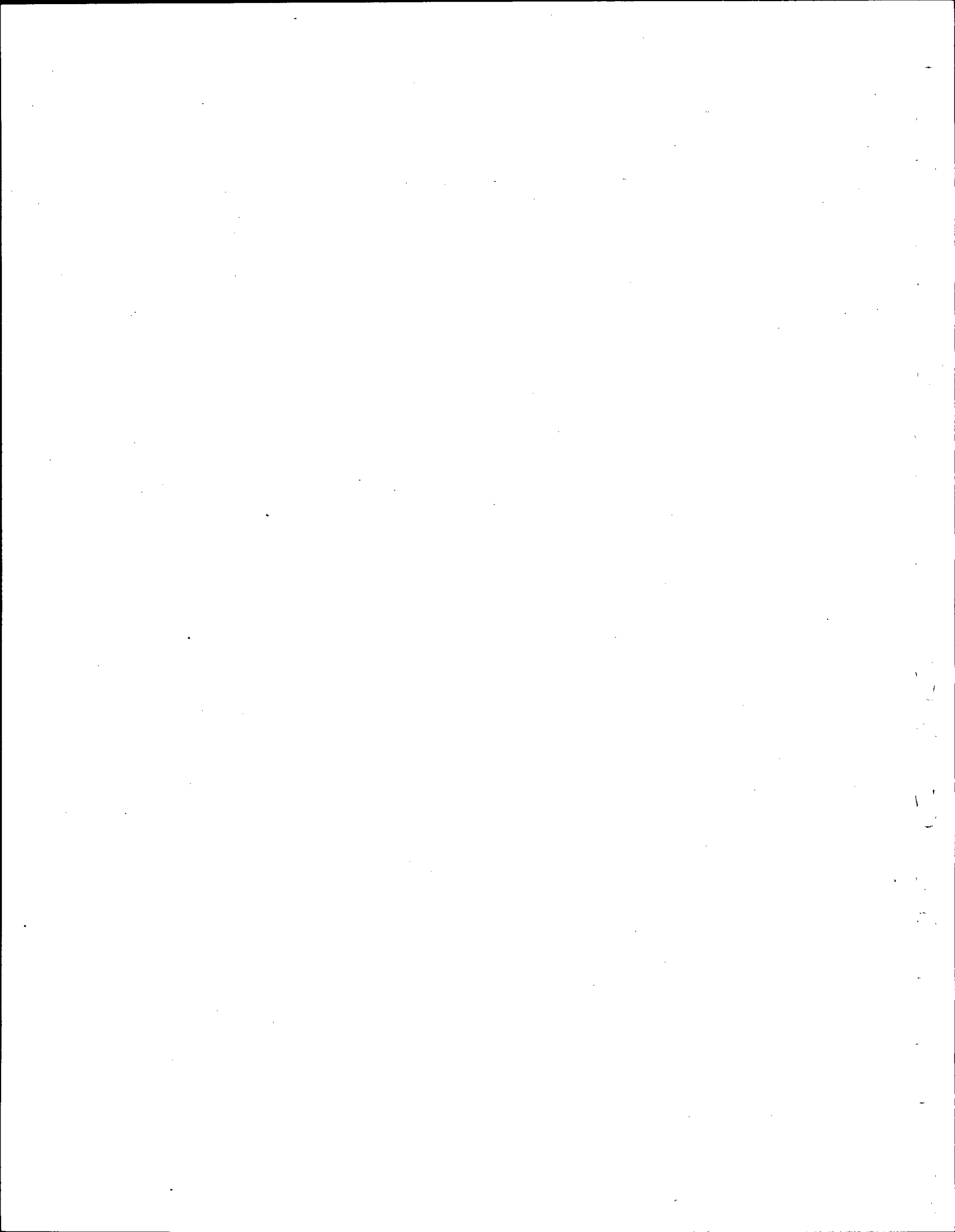
What type of contingency plan will be utilized to assure that, if necessary, groundwater remediation strategies are implemented?





TOWN OF BROOKHAVEN - BROOKHAVEN LANDFILL
HYDROGEOLOGIC INVESTIGATION-CELL 5
HISTORICAL SURFACE WATER
SAMPLING LOCATIONS





6.3.2 Response

The Contingency Plan described in Section 7.0 of the Engineering Design Report, which is incorporated herein by reference, sets forth the procedures that will be followed, if necessary, to implement remedial measures to prevent the contamination of groundwater. These procedures are summarized below.

The landfill baseliner construction and the incorporation of various leachate control measures in the landfill design are expected to prevent groundwater contamination. Further, the background groundwater monitoring results, the baseline of water quality data that is established, and the measurement of the quantities of leachate collected in the secondary leachate collection systems of the proposed sub-cells provide the mechanism for substantiating the effectiveness of the control measures or identifying impacts, if any exist.

Nevertheless, in the event results obtained from groundwater samples indicate significant increasing trends of contamination for downgradient wells or that background water quality levels are exceeded, then the contingency program generally described below will be undertaken.

- Prepare a written evaluation of the significance of the results and assess the need for further evaluations. This evaluation will be submitted to NYSDEC within four weeks of receipt of analytical results, and completed every quarter as part of the regular reporting of environmental monitoring data.
- Verify the results in question by additional sampling and analysis within six weeks of the receipt of the original data.
- The results of the additional sampling and analysis will be forwarded to NYSDEC upon receipt.
- If the Town and NYSDEC concur that the results of the written evaluation, and the additional sampling and analysis indicate the need for further investigations, the following may be implemented:
 - Develop a hydrogeologic investigation program to determine the source and extent of contamination and submit the proposed program to NYSDEC for approval.

- Complete field investigation within two months of NYSDEC approval of the proposed program. Prepare a report describing conclusions and recommendations within two months of completing all field investigations. The report will identify the source and mechanisms of groundwater contamination, as well as evaluate the risks to human health and the environment presented by the contamination. The report will also identify proposed measures to be undertaken to remediate the groundwater contamination.
- If remedial construction is required, prepare final plans and specifications within four months of NYSDEC approval of report.
- Implement remedial construction based on a construction schedule approved by NYSDEC.

6.3.3 Comment

There's a second direction I would argue you must monitor there, and that's in the direction of the Suffolk County Water Authority well field, and that includes Magothy wells in both directions as well as shallow groundwater wells.

6.3.3 Response

As shown in Figure 2-11 of the DEIS, two groundwater wells are proposed for monitoring in the area between the proposed Landfill Expansion Area and the western boundary of the Waste Management Facility site. One well will monitor the Upper Glacial Aquifer, and the other the Lower Glacial Aquifer to detect any possible contamination that may migrate toward the Suffolk County Water Authority Well Field on Station Road. It should be noted that the results of aquifer tests performed by Leggette, Brashears and Graham for the Suffolk County Water Authority, indicate that there is no potential for leachate-derived contaminants to migrate into the SCWA's Station Road Wellfield (See Response 6.2.4).

6.3.4 Comment

The DEIS indicates that groundwater tests will be made quarterly. That is not adequate, given the proximity to the Suffolk County Water Authority well field. We

believe that the tests should be conducted by independent testing labs, and that the test results be readily available for public scrutiny.

6.3.4 Response

The NYSDEC can require more frequent sampling and analysis at environmentally sensitive sites, if they deem it necessary (6 NYCRR Part 360-2.11(c)(ii)(a)). The site has not been determined to be environmentally sensitive and there are no other special circumstances which would warrant a determination of a more frequent sampling schedule. The sampling program outlined in Section 6.3.1, is in accordance with the current regulatory requirements.

The testing of the quarterly well samples will be conducted by an independent (State-approved) laboratory, and the results will be available for public review.

6.3.5 Comment

The DEIS did not address the mitigation of the existing plume of groundwater contamination in the landfill and its continued development if leachate should escape from the new Cell 5.

6.3.5 Response

The mitigation of groundwater contamination emanating from the Existing Landfill is currently underway and is addressed in Response 3.3 and Appendix 6 of this FEIS. It should be noted that the safeguards to be employed in the development of the Landfill Expansion are orders of magnitude greater than those which currently exist (e.g., the proposed primary composite liner system is more than 400 times less permeable than the single liner of Cell 1; and the Landfill Expansion Area will contain a double composite liner system). In addition, there will be a groundwater monitoring system that is designed to detect a leak, should one occur, before it commingles with the existing contamination plume.

These issues are fully addressed in the Hydrogeologic Investigation Report and the Engineering Design Report (See Section 6.10 of that report) which are incorporated by reference in this FEIS.

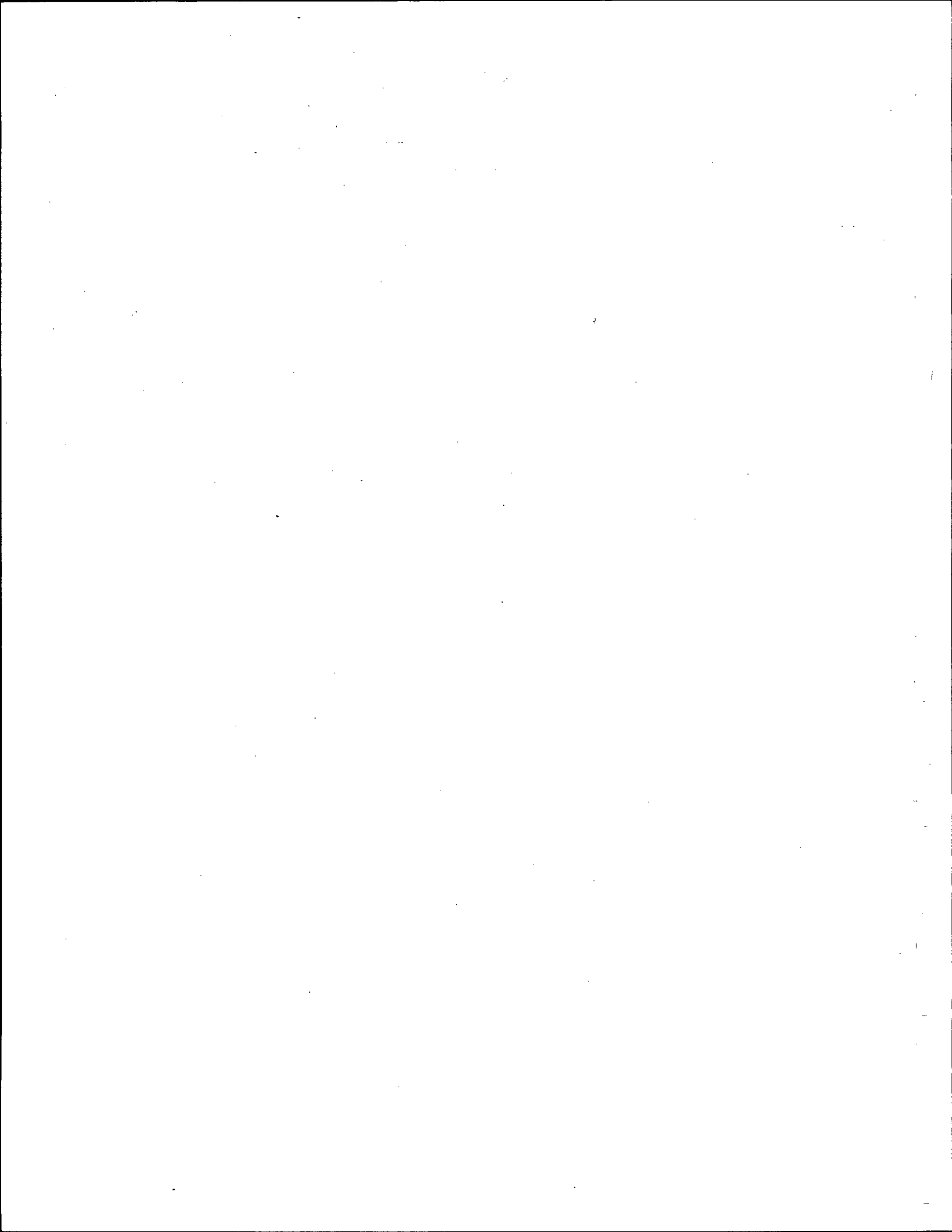
6.3.6 Comment

Include complete hydrogeological study in the FEIS.

6.3.6 Response

The Hydrogeological Investigation Report, prepared by Dvirka and Bartilucci for the development of the Landfill Expansion, is being incorporated by reference into this document. It is available for review at all locations at which this FEIS is available for review.

7.0 ENERGY RECOVERY FACILITY ASH ISSUES



7.0 ENERGY RECOVERY FACILITY ASH ISSUES

Numerous commentors expressed concern about the potential effects associated with the disposal of waste-to-energy facility ash at the proposed landfill expansion. These concerns included the sources, characteristics and handling procedures for the ash, as well as questions about alternative uses for ash and problems experienced by other ash disposal facilities. Concerns were also expressed regarding air quality impacts from fugitive dust emissions of dry ash.

7.1 ASH SOURCE(S)

7.1.1 Comment

Confirmation should be provided that the new Cell 5 will only be used for ash from the Hempstead Energy Recovery Facility and Town of Brookhaven "by-product" wastes.

"The DEIS states that the landfill will only be used for ash from the Hempstead incinerator as well as our own by-product waste. I would like to see some kind of confirmation, some kind of legislation that would guarantee that would be the truth."

"Expansion of the landfill to accommodate garbage from outside of Brookhaven may provide quick, fix financing but economically and environmentally sells out our future. Recycling is the long term economic and environmental winner."

7.1.1 Response

As noted in Section 2.5.6 of the DEIS, the Landfill Expansion Area will accept the following waste stream components for disposal:

- Unprocessable waste from the Town's waste management/disposal systems
- Downtime waste from the solid waste processing facilities utilized by the Town
- ERF Ash from Hempstead

- Process residues from other solid waste management facilities utilized by the Town
- C&D debris process residues
- Car shredder residue
- Clean Fill

The Town does not currently propose to accept any other wastes. The Town does not, however, wish to preclude itself from considering the acceptance of other waste streams at the Landfill Expansion Area in the future if, based on a case by case review, acceptance of such other wastes is legally authorized, environmentally sound and beneficial to the Town. For example, the Town has been engaged in preliminary discussions with the Town of Huntington to consider acceptance of ERF ash generated at the Huntington Resource Recovery Facility.

The Town is not proposing to enact a legislative waste limitation, as suggested by one commentor, because such a limitation would adversely affect the Town's future options in this respect, which could limit the Town's future waste reduction and recycling options. For example, recycling opportunities which may present themselves in the future could involve the acceptance of residues from sources outside of the Town. The Town wants to be able to evaluate such opportunities on their own merit as they arise.

In the event that the Town wishes, in the future, to change the current proposal in order to accommodate waste stream components that are different from those noted above, appropriate environmental review by both the Town and the NYSDEC will have to be conducted prior to accepting such components.

7.1.2 Comment

How can the Town allow this now when it opposed the siting of a regional ashfill in the Town in the 1980s?

"The Cell 5 landfill expansion is now becoming a REGIONAL ashfill with Hempstead burning ash from Hempstead, Brookhaven, New York City, and now Oyster Bay."

7.1.2 Response

In 1985, the State Legislature enacted the Long Island Ashfill Law (the Ashfill Law) to assist in the development of a Long Island Regional Ashfill to accept ash residues from all of the incinerators and resource recovery facilities in Nassau and Suffolk counties. The Ashfill Law charged the New York State Environmental Facilities Corporation (EFC) with the task of recommending a site for the Regional Ashfill. Although a site was recommended for the Regional Ashfill, the process was never completed, and the site was never developed. The proposed Regional Ashfill site was located in the Town of Brookhaven, and its development was opposed by the Town at the time.

Several commentors suggested that the Town's previous position is inconsistent with the current proposal for the Landfill Expansion Area, and that the Landfill Expansion Area is the Regional Ashfill.

It should first be noted that the proposed Landfill Expansion Area is fundamentally different from the previously proposed Regional Ashfill. The Regional Ashfill was to service all of the towns in Nassau and Suffolk counties, representing ten potential facilities handling 2,750,000 to 3,470,000 tons of municipal solid waste annually, and generating 500,000 to 1,250,000 tons of ash residue per year. The proposed Landfill Expansion Area will never accept ash residue from all of the towns on Long Island. The Landfill Expansion Area has been designed with an 18 year life expectancy assuming continued delivery of ERF Ash from a single resource recovery facility in Hempstead (approximately 230,000 tons per year), along with other waste streams noted in the DEIS. Even if the Town were to accept ash residue from one of the other five existing waste-to-energy facilities on Long Island, the Landfill Expansion Area would still not be the Regional Ashfill contemplated by the Ashfill Law, because it would not be serving all of Long Island.

Further, the Town's proposal for the Landfill Expansion Area is not inconsistent with its previous opposition to the Regional Ashfill for the reasons noted below.

- The Landfill Expansion Area is proposed for a different site than the proposed Regional Ashfill (See Map in Appendix 22). The proposed Landfill Expansion Area meets all of the criteria of the NYSDEC with respect to landfill siting, and is not located in the deep flow recharge area.

- The Town would have had only limited control over the operation of the Regional Ashfill. The Landfill Expansion Area will be developed under the exclusive control of the Town, subject to the regulations of the NYSDEC, and other requirements of applicable law. Under this arrangement, the Town is much better able to ensure that its citizens are not adversely impacted by facility operations.
- In 1985 and 1986, little was known about the impacts of landfilling ash residue. Much more is known now. The Town reviewed the available information in its SGEIS of 1991, and has reviewed additional data (including data regarding the landfilling of ash at the Existing Landfill) in this EIS.

7.2 ASH COMPOSITION/QUALITY/MONITORING

7.2.1 Comment

More detailed characterization should be provided of the ash that will be landfilled. Metals and other contaminants in the ash cause it to be toxic. What about the chemical composition of the ash and the constituents that may be contained in dust generated during the landfilling operations?

"Incinerator ash is contaminated with an array of toxic heavy metals and organic chemicals...ash that's generated close to home often exhibits characteristics of hazardous waste."

"Because it (ash) comes out of a very hot furnace, (it) is often dry in nature or dries out over time."

"Ash from Islip has a very high level of an assortment of heavy metals and organic chemicals, some of which are probably cancer-causing."

"One thing that angers me is the fact that fly ash is being mixed in with bottom ash, and is the ash being delivered to the landfill site, and the

justification is that it's being - its adverse effects are being reduced by dilution."

"I think there should be an appendix which uses the present data that the Town must possess on ash contents."

"In 1987, DEC's test of ash from six New York State incinerators found that more than half of all samples tested had exceeded federal lead and cadmium levels for what constitutes hazardous waste."

"I'm also concerned that the ash may contain dioxin..."

"There's no characterization of what's going to be dumped at that site."

7.2.1 Response

The Town of Brookhaven maintains an ongoing program to monitor the quality and composition of the ERF Ash that is disposed of at the Existing Landfill. The Town's testing program occurs on a much more frequent basis than the semi-annual testing required of the ERF operator by NYSDEC regulation. The Town conducted 27 sampling events between September 1991 and June 1993. Results of this periodic testing are summarized in Table 7-1.

Data on the quality of the ERF Ash was previously presented in the FSGEIS (see Table 2.1-1). Brookhaven's IMA with the Town of Hempstead provides that all ash residue delivered to the Existing Landfill and Landfill Expansion Area meet applicable standards set forth in State and Federal laws and regulations. The Town of Brookhaven IMA also imposes other minimum standards, for example, a minimum moisture content of 18 percent, on ash delivered to the Existing Landfill and the Landfill Expansion Area.

Tests conducted by the Town of Brookhaven of the ash from the Hempstead ERF confirm the presence of very low levels of dioxins and furans. It should be noted that dioxin and furans are common byproducts of all combustion and many industrial processes. However, the levels exhibited by the ERF Ash are not a cause for concern. Measured levels of toxicity equivalent is 157.6 picograms per gram or 0.158 parts per trillion (ppt). This is

TABLE 7-1
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
SUMMARY OF HEMPSTEAD ASH TESTING
CONDUCTED BY THE TOWN OF BROOKHAVEN

Parameter	Units	Mean	Minimum	Maximum	Number of Samples
pH	S.U.	11.26	10.21	11.97	27
% Moisture	%	19.7	4.7	27.9	22
TOC/TVS	ppm	32082	13900	60800	27
Cadmium					
EP Toxicity	mg/l	0.71	<0.1	1.60	21
TCLP	mg/l	0.45	<0.1	1.21	13
Lead					
EP Toxicity	mg/l	3.08	<0.5	13.60	21
TCLP	mg/l	0.91	<0.5	3.72	13
Mercury					
EP Toxicity	mg/l	0.06	<0.02	0.290	21
TCLP	mg/l	0.02	<0.02	0.089	13
Arsenic					
EP Toxicity	mg/l	0.25	0.176	0.25	21
TCLP	mg/l	0.25	0.232	0.259	13
Barium					
EP Toxicity	mg/l	4.78	0.443	<10	21
TCLP	mg/l	4.35	0.671	<10	13
Chromium					
EP Toxicity	mg/l	0.25	0.158	<0.5	21
TCLP	mg/l	0.24	0.168	0.265	13

Note: Silver and Selenium have never been found above the limits of detection in 21 EP toxicity and 13 TCLP tests.

less than 16 percent of the 1 ppt toxicity equivalent which the US Centers for Disease Control have determined to be an acceptable concentration in backyard soil. It should also be noted that dioxins and furans are relatively insoluble in water and remain attached to solid ash particles (Schaub, 1989). Therefore, there are no anticipated adverse impacts on leachate quality.

The Hempstead Resource Recovery Facility continues periodically to sample and analyze the composition of the ERF Ash it produces in accordance with its operating permit. Recent analytical results from July 1992 show no significant change from the data developed as part of the NYSDEC study discussed below. That is, although quantities of certain heavy metals exist in the ash residue, the potential for metals to leach from the ash residue is minimal. The TCLP extraction analysis performed on ERF Ash collected during the July 1992 sampling event continues to demonstrate that the concentration of heavy metals in the extract fall below any level of concern. The results of this analysis are presented in Appendix 9.

The courts are split as to whether RCRA's hazardous waste rules apply to ash residue generated by waste-to-energy facilities. One Federal Circuit Court of Appeals (the Second Circuit, which encompasses the State of New York) has ruled that RCRA's hazardous waste disposal requirements do not apply to ash residue generated by waste-to-energy facilities, so long as the facility has appropriate waste screening procedures to ensure that unauthorized hazardous waste is not disposed of at the facility. The Landfill Expansion Area is within the jurisdiction of the Second Circuit Court of Appeals and, therefore, its decision applies. Another Federal Circuit Court of Appeals (the Seventh Circuit) recently issued a contradictory ruling, holding that such ash residue must be transported, stored, and disposed as a hazardous waste if it exhibits hazardous characteristics pursuant to the TCLP. A petition for review by the Supreme Court of the United States of the decision of the Seventh Circuit Court of Appeals was granted, and the appeal is presently pending before the Supreme Court.

It should also be noted that the USEPA recently issued a determination confirming that ash from municipal waste combustion facilities is not a hazardous waste and that the disposal of ash in municipal landfills, subject to the new requirements of 40 CFR Part 258, will be protective of human health and the environment. (See memorandum of September 18, 1992 from EPA Administrator William K. Reilly to all Regional

Administrators, presented in Appendix 16.) This memorandum constitutes EPA's official position on the issue.

The NYSDEC has also established criteria for the proper management of ash residue generated by the combustion of municipal solid waste. These criteria include design and operational requirements for the landfilling of ash residue as stated in 6 NYCRR Part 360. The NYSDEC has concluded that ash residue, if landfilled in compliance with the requirements of 6 NYCRR Part 360, will not pose any significant environmental or health threat. With its double composite liner system, the proposed development of the Landfill Expansion Area meets or exceeds the requirements established by both the NYSDEC and the USEPA.

One commentator suggested that tests conducted by NYSDEC in 1987 concluded that half of all ash samples from six New York incinerators exceeded federal standards for lead and cadmium. The 1987 data are now out of date, and no longer applicable. Between 1987 and 1989, the NYSDEC continued its ash testing program with the objective of developing a more rigorous sampling protocol which would yield more reliable and meaningful results. Using the new sampling protocol, the NYSDEC continued testing at six facilities in 1990, including the Hempstead Resource Recovery Facility. The results of this study are contained in a report entitled "Ash Residue Characterization Project, March 1992." This NYSDEC study examined the composition of ash residue and its potential for leaching heavy-metals, as measured by accepted analytical procedures, and compared the leaching potential results to actual results obtained for leachate quality at ash residue monofills. The major conclusions set forth in the report regarding ash residue quality and associated leachate quality include:

- The sampling and testing program required by the NYSDEC is capable of providing representative results from the operating MSW combustion facilities.
- Extraction and leachate data indicate that ash residue, when properly managed, does not generate a leachate that contains a concentration of heavy metals which will pose a significant environmental impact. Leachate does, however, have a significant salt content, and must be managed accordingly.
- Laboratory extraction tests (i.e., TCLP) significantly overestimate the concentration of lead and cadmium that actually leaches from incinerator ash

placed in an ash monofill. In comparing the results from the leaching test with actual ash fill leachate results, none of the ash laboratory tests accurately predicted actual ash monofill leachate characteristics. The metals concentration in the ash monofill leachate was frequently measured in concentrations at, or below, groundwater standards. Laboratory leaching tests yielded higher results and, in some cases, concentrations exceeded 100 times the groundwater standards.

One commentor suggested that the ash from Islip has a very high level of an assortment of heavy metals and organic chemicals. The previously cited study by the NYSDEC does not bear out this statement. Most of the metals which were analyzed for were not detected by the NYSDEC study. Those metals which are usually of most concern (i.e., cadmium, lead, and mercury) were detected at low levels, if at all.

Another commentor expressed concern that fly ash is being mixed with bottom ash and that its adverse properties are thus diluted. While it is true that the ERF Ash contains a mixture of bottom ash and fly ash, this is an acceptable management practice that is approved by New York State regulations (6 NYCRR 360-3.5(g)).

7.2.2 Comment

How will operations at the Hempstead facility affect the quality of ash delivered to Brookhaven?

"The materials that are being incinerated in the Hempstead facility and the ash should be monitored on a daily basis. Needless to say, Brookhaven Town should not accept ash that contains hazardous levels of compounds such as heavy metals."

7.2.2 Response

The commentor offers no scientific basis to support the claim that the ash should be monitored on a daily basis, presumably to determine levels of heavy metals.

The Hempstead facility has implemented, as part of its operating procedures, a Waste Control Plan to monitor and control the type of material that is to be processed by the

facility. The Waste Control Plan, as approved by the NYSDEC, is utilized to ensure that the facility does not process hazardous waste or any other type of unacceptable waste stream. The major elements of the Waste Control Plan include:

- Use of solicitation letters to potential users of the facility to identify potential unacceptable waste streams.
- Use of local programs in the communities that use the facility to remove from the overall waste stream such items as household hazardous waste, bulk ferrous, and white goods, as well as programs to remove construction and demolition debris.
- Specific facility controls including availability of information to private haulers regarding acceptable waste streams, 24-hour security and access control to prevent unauthorized waste deliveries, specific contract language regarding unauthorized waste streams with facility users and performance of periodic spot checks of incoming waste loads to monitor compliance with the program. The results of the periodic spot checks to ensure compliance with the Waste Control Plan are recorded and submitted to the NYSDEC as part of the Facility's Quarterly Operating Report.

Town of Brookhaven personnel perform a visual inspection of each ash delivery vehicle, checking to ensure that they are properly covered and not leaking. As noted in Response 7.2.1, the Town tests ERF Ash once or twice per month, although this testing frequency may be reduced in the future. It is worth noting the frequency of ERF Ash testing conducted by the Town to date is far in excess of the bi-annual frequency required of the ERF operator by NYSDEC regulations. The results of the Town's ERF Ash testing have exhibited no significant variability which would warrant the establishment of daily testing. Increasing the testing frequency to every day would represent an unnecessary additional cost for the Town.

7.2.3 Comment

How can the quality of the ash coming into the Brookhaven facility be checked?

"What control does the Town of Brookhaven have over the quality of ash entering its facility?"

7.2.3 Response

The frequent testing performed by the Town on ERF Ash generally confirms the analytical data developed by the Hempstead facility. It is the intention of the Town to continue the practice of independently monitoring the quality/composition of the ERF Ash that is disposed of at the landfill. A summary of the results to date is presented in Table 7-1 and discussed in Response 7.2.1.

Under the terms of the IMA, Brookhaven retains the right to reject ERF Ash deliveries if it is determined to be hazardous waste, does not meet the specified quality standards, or in any other manner fails to comply with the requirements of applicable law relating to ash disposal.

7.3 ASH HANDLING AND DAILY COVER

7.3.1 Comment

The DEIS does not discuss in enough detail the stormwater runoff and leachate generation issues associated with ash filling.

7.3.1 Response

Control of stormwater run-off and leachate generation are discussed in the DEIS in Section 2.5.4 (Drainage and Erosion Control), and Section 2.5.6 (Operational Controls and Monitoring).

Sloping of the surface that the daily cells are built upon creates a condition where the runoff from the covered areas, once filling has reached an elevation higher than the surrounding area, is directed to the recharge basins. The maintenance of intermediate cover will prevent ash from becoming a part of the runoff sediment.

The landfill may be required to obtain surface water discharge permits under the N/SPDES program. If such permits are required, the quality of the surface water runoff will

be measured and reported in accordance with the terms of the permit. This monitoring will provide documentation that the management methods have been successful or that operating procedures must be changed.

Additional information on leachate generation is provided in Responses 8.3.6 through 8.3.9.

7.3.2 Comment

The exemption from daily cover placement should not be allowed, and there should be a specific identification of the cover material components that should be used (see also Comment 8.3.3).

"The draft document also talks about not putting daily cover on top of the ash. Again, it doesn't adequately talk about what the leachate implications are of not putting that daily cover on, nor does it address what the long term implications are or the impacts of weather cycles, such as freeze-thaw cycles, ash that isn't covered like that."

"What will the "cover material" consist of? What will be the ratio of earth to sand to loam in the mixture."

7.3.2 Response

While the DEIS stated that daily cover would not be applied, this does not mean that the ash will not receive cover prior to reaching final grades. Cover will be placed on all surfaces of the ash disposal area with the exception of the sloped face of the operational face. This operational working face will be limited in size to an area of about 40 feet by 100 feet.

With respect to leachate generation, a recent report (Szurgot, 1992) suggests that leachate generation could be reduced by not using daily cover. This is due to higher permeability of the typical cover soil as compared to the ash matrix, which tends to bind and harden over time.

Seasonal temperature variations and freeze-thaw cycles will not affect the landfilled ash, since only the operational working face will be exposed and uncovered on an ongoing

basis. No adverse experience has occurred in this regard during the two winter seasons during which ERF Ash has been accepted at the Brookhaven Landfill.

7.3.3 Comment

How will water be applied to the landfill to keep dust conditions from being created in dry weather?

"Now we have ash, fly ash and bottom ash, toxic ash, lead, all to be put in Cell 5. What will happen on a windy day? How effective will the new water truck really be?"

"What methods will you use to water down the ash during a prolonged dry spell?"

"How will a 230-foot high mountain of ash be wetted down?"

7.3.3 Response

These comments suggest that the entire ash landfill will require wetting in order to prevent fugitive dust emissions. The area potentially requiring wetting is limited to the daily disposal cell, an area less than 40 feet x 100 feet. Areas which will not be covered with fresh ash within 24 hours will be covered with daily cover. This 40 foot x 100 foot exposed area, along with the operational roads, can easily be managed by the water truck that will be part of the operation.

On windy days, fugitive dust generation will be prevented by the fact that the ash is delivered moist. Additional water will be applied, if necessary, to keep the small area of exposed ash moist. In the event of excessive winds such as those associated with a major storm or hurricane, operation of the Landfill Expansion Area could be suspended, as noted in Response 7.3.5.

7.3.4 Comment

Will ash handling at the Brookhaven Landfill be different from ash handling at other ash landfills (specific concerns were raised about impacts occurring in Islip)?

7.3.4 Response

Section 2.5.6 of the DEIS presented a discussion of how ash will be handled at the Landfill Expansion.

Ash placement will commence at a location physically separated from other waste and residue placement. The separation will be achieved by the use of a berm. Placement will begin at the low (or western) end, with an overall cell fill progression from south to north. Daily ash placement will be perpendicular to the overall cell fill progression or along an approximate west-east alignment. As new cells are constructed under Operational Phases I through IV, a similar fill progression will be employed.

The ash will be spread and compacted over the prepared landfill base or on a preceding lift of ash. Incoming ash will be deposited and compacted in layers of a maximum thickness of two feet. The area will be brought to grade by construction of cells, each composed of the ash received on a daily basis. Ash will be placed in daily lifts starting at the western end of a cell, with the intent of reaching final grades on portions of the Expansion Area as quickly as possible.

An Operations and Maintenance Plan for the Town of Brookhaven Landfill Expansion has been developed in response to comments raised concerning the need for a management program to insure that the Town is capable of operating the Landfill Expansion Area in the manner intended. It should be noted that the plan is one of the required documents to be submitted as part of the 6 NYCRR Part 360 (Section 29) permit application package. This plan, described in Section 6.0 of the Engineering Design Report which is incorporated herein by reference, is intended to meet these requirements and will be subject to review and acceptance by the DEC.

The operation of the proposed Landfill Expansion Area is different from procedures used at the Town of Islip facility. Ash from the Islip ERF is processed by equipment located outdoors on top of the Islip Landfill, to create a stabilized/pelletized product. The outdoor processing of the ash, which involves multiple handling steps, including mixing with Portland cement and the outdoor storage of the ash pellets, are believed to be the cause of the alleged dust problem at the Islip facility. Since ERF Ash will not be processed, pelletized and/or stored at the proposed Landfill Expansion Area, similar problems will not be encountered.

7.3.5 Comment

The DEIS has not considered the impacts of a major storm event on ash filling operations at the new Cell 5.

7.3.5 Response

Contingency procedures to be used in connection with a major storm event have been enumerated in the Operations and Maintenance Plan, which is part of the Engineering Design Report submitted as part of the permit application documents for the Landfill Expansion Area, and which is incorporated by reference in this FEIS.

During each of the major storms which occurred in the winter of 1992/1993, the Existing Landfill continued its scheduled operation uninterrupted. If necessary, the operation of the Landfill Expansion Area could be suspended during the occurrence of a major storm event, such as a hurricane. Stormwater management and leachate facilities have been designed to accommodate the 25-year, 24-hour storm event, as required by State regulations.

7.3.6 Comment

Does the Town have a plan in place to respond to and clean up a major ash spill should one occur on local roadways?

"I recommend inspections to ensure that trucks transporting the ash are covered as is required by Part 360 regulations. No uncovered trucks should be allowed to leave the Hempstead Resource Recovery facility or enter the Brookhaven Landfill site. Operational procedures should include all measures necessary to mitigate fugitive dust emissions..."

7.3.6 Response

The Town currently monitors incoming vehicles and waste streams to ensure compliance with the above-noted requirements. It is worth noting that since ERF Ash deliveries to the Existing Landfill commenced in September 1991, there have been no observations of uncovered truck deliveries and no spills of ERF Ash. As noted in

Section 2.5.6 of the DEIS, these incoming waste monitoring programs will continue to be employed in connection with the operation of the Landfill Expansion Area.

In the event of a major ash spill on a roadway in Brookhaven (for example from an overturned ash truck), the Town will dispatch police, fire, first-aid and other emergency response units, as necessary, to ensure that any injured persons receive proper treatment, to ensure that traffic flow is maintained or restored as soon as possible, and that spilled ash is cleaned-up as soon as possible. If such a spill were to occur in the Town of Brookhaven, the cost of the clean up would be assessed to Hempstead under the IMA. It should be noted, however, that the potential adverse consequences of an ash spill are much less severe than spills of other more hazardous materials, particularly liquids such as fuel oil or gasoline.

In accordance with the terms of the IMA, ash deliveries must follow a designated truck route, or alternate route, in the event of a significant traffic delay on the designated route. Ash delivery trucks must ordinarily use the Long Island Expressway, and from Exit 64 proceed east on the south service road to Horseblock Road, and southeast on Horseblock Road to the Facility Site entrance. The alternate route is Sunrise Highway to the Yaphank Avenue Exit, northbound to Horseblock Road, to the Facility Site entrance.

The terms of the IMA also require that the ash hauling containers be equipped with waterproof trailer liners to ensure leak-proof delivery, and a waterproof tarp to be fully secured at all times when the vehicle is in transit. The IMA also establishes a minimum ash moisture content of 18 percent to ensure that fugitive dust emissions will not be created when the ash is dumped and filled.

7.3.7 Comment

Additional truck traffic will create a serious impact.

"The daily impact of additional tractor trailers...are hazards one community need not continually be forced to sustain."

"We concur that the traffic generated by this project will not affect New York State Routes 112, 27, and I-495."

7.3.7 Response

A detailed traffic impact study conducted as part of the DEIS concluded that the additional vehicular traffic associated with the construction and operation of the Landfill Expansion Area will not significantly impact traffic in the vicinity of the project (see DEIS Section 4.5.3). The New York State Department of Transportation has concluded that there will be no impact on State Routes 112, 27, and I-495. (See letter from John Falotico, referenced as ID#71 in Appendix 2).

The unsignalized intersection of the Facility Site driveway at Horseblock Road is projected to experience a deterioration in level of service, if no mitigation measures are implemented. However, the planned new access and signalization of the Facility Site driveway will restore an acceptable level of service to this intersection.

7.4 ALTERNATIVE USES

7.4 COMMENT

Research that has been performed regarding alternative uses of ash is questionable.

"Some officials have stated and done research to the effect that ash can be mixed with concrete and disposed of safely and reused."

7.4 RESPONSE

The proposed action does not include provisions for the processing and/or beneficial re-use of ash residue. The alternative was discussed in Section 7.3 of the DEIS.

The SWMP prepared by the Town, and its associated assessment of environmental impacts, have been adopted by the Town as the best alternative technologies for managing generated solid waste. In reaching this conclusion, the Town examined closely the issue of beneficial ERF Ash usage. In 1991, the Town concluded that while beneficial use of ERF Ash showed promise, the technologies had not been sufficiently developed to warrant further investigation at that time. Since the time of the 1991 Update SWMP/FSGEIS, significant commercial/regulatory progress has not been made in this area.

However, the Town recognizes that the field of solid waste management is ever-changing. The Town, as part of its overall planning process, will continue to look at alternative technologies to manage its Waste Stream and modify its SWMP, as necessary,

as those technologies may develop. The phased development of the Landfill Expansion will provide the Town with the flexibility to respond to changing Waste Stream types and/or volumes associated with changing technologies and recycling markets.

The provisions of the IMA and the flexibility of the design for the Landfill Expansion Area will enable the Town to employ appropriate beneficial re-use technology in the future, if such technology becomes viable.

7.5 ENVIRONMENTAL IMPACTS FROM FUGITIVE DUST

7.5.1 Comment

Numerous concerns were raised regarding the potential adverse impacts associated with windblown ash from the Landfill Expansion, and suggesting that air monitoring should be conducted.

"The local community surrounding the landfill might be seriously impacted years from now by errant ash dust or leachate., Three schools from the South Country Central School District lie directly downwind of the proposed expansion."

"We would like to have more information on the effects of air quality, the effect of the landfill and the ash on the air quality in the area."

"Dangerous ash could blow into the wind that we breathe."

"We too are concerned with potential odor at Cell 5, but mostly with the potential release of hazardous particulate matter in the area, namely ash."

"In doing away with odors, of course we've greatly enhanced the problem of dust, and the dust is not only a health hazard to on-site workers and to some nearby neighbors, but it can be a great and major source of groundwater pollution."

"The most important (issue) is a risk of illness and related diseases caused by the presence of millions of tons of ash from the Hempstead incinerator."

7.5.1 Response

The DEIS presented an extensive discussion of potential impacts from windblown ash which concluded that no significant impacts would occur as a result of fugitive ash emissions or dust generation. It is also noted that since the commencement of ERF Ash deliveries to the Existing Landfill in September 1991, there have been no complaints filed about windblown ash from the Existing Landfill. In response to public comment on the DEIS about potential adverse impacts from wind-blown ash, the Town commissioned a supplemental study of potential human health impacts and has also proposed an air monitoring program to assess operational ash dust levels in the vicinity of the Landfill Expansion Area.

The supplemental study, Potential Human Health Impacts Due to Inhalation of Fugitive Dust from Incinerator Ash at the Brookhaven Landfill, prepared by Harlee S. Straus, is presented in its entirety in Appendix 10 of this FEIS. The health impact study addresses two specific areas of concern:

- Potential health impacts of ash-related fugitive dust in the neighboring residential areas.
- Potential health impacts of ash-related fugitive dust to the workers at the landfill.

The question of health impacts in the community is addressed by calculating an ash-related fugitive dust concentration at the landfill boundary that will not result in any long- or short-term adverse impacts at that boundary. These maximum concentrations are presented in Table 7-2. Adverse impacts include all non-cancer effects and lifetime excess cancer risks for highly exposed individuals that are less than one in a million for each contaminant, and less than one in one hundred thousand for the ash-related fugitive dust as a whole. The maximum allowable fugitive dust concentrations determined in this health impact study are compared with the measured concentrations of ash-related fugitive dust at an MSW Ash Landfill in Haverhill, Massachusetts. Based on this comparison, it appears

TABLE 7-2
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
MAXIMUM ALLOWABLE CONCENTRATIONS OF FUGITIVE DUST

	<i>Permissible Annual Fugitive Dust Concentration (ug/m³)</i>	<i>Permissible Short-Term Fugitive Dust Concentration (ug/m³)</i>	<i>Comments</i>
Antimony	20,000	300,000	
Arsenic	20	4,000	
Barium	2,000	200,000	
Beryllium	800	50,000	
Cadmium	30	3,000	
Chromium VI/III	200	50,000	Assume 3% CrVI
Cobalt	30,000	1,000,000	
Copper	4,000	100,000	
Lead	1,000		Based on NAAQS
Mercury	50,000	600,000	
Nickel	20	300	
Selenium	1,000,000	40,000,000	
Silver	300,000		Based on RAC
Thallium	100,000	5,000,000	
Vanadium	20,000	3,000,000	
Zinc	30,000	30,000	
Dioxin TEQ	300		

Source: Harlee Strauss. Potential Human Health Impacts Due to Inhalation of Fugitive Dust from Incinerator Ash at the Brookhaven Landfill.
 January 1993.

that actual ash dust concentrations at the Brookhaven Landfill boundaries will be substantially below the maximum allowable concentration calculated in this report.

In order to mitigate and avoid any potential impacts from fugitive dust, the Town also proposes to establish, as part of the operation of the Landfill Expansion Area, an air monitoring network to monitor both the quantity and quality of fugitive dust generated. If exceedances of the maximum concentration limits (described in the health study) occur at the perimeter of the facility site, appropriate response action would be initiated. Such response actions could include the application of additional water to suppress dust generated or the application of daily (or more frequent) cover material. Additional details on the proposed monitoring program are presented in Appendix 11.

7.5.2 Comment

"Ash that blows off the landfill either on the surrounding ground within the landfill site or on the adjacent grounds that will be readily leachable material for most of the heavy metals."

7.5.2 Response

Mitigation measures previously described will be employed to prevent wind-blown ash at the Landfill Expansion Area. There is no evidence to suggest that metals present in the ash will be readily leachable. Recent studies of ash leachate by the NYSDEC (reported in Ash Residue Characterization Project, March 1992) found that concentrations of metals being leached are comparable to the Primary Drinking Water Standards set forth in 6 NYCRR Part 5. Ashfill leachates were generally high in sulfate, chloride, sodium, potassium, and calcium. Leachates of ERF Ash delivered to the Brookhaven Landfill exhibits relatively low levels of metals (see Table 7-1) and higher levels of sulfate, chloride, sodium and other dissolved salts.

Therefore, the leaching potential of any fugitive ash that may escape from the lined portion of the Landfill Expansion Area does not represent a significant impact.

7.5.3 Comment

How will dust monitoring be performed? Testing should be performed by independent laboratories and the results should be provided to the public.

"One thing that I think is particularly necessary is a scheme to monitor the windblown ash."

"The DEIS is deficient in not providing for air testing for both gas emissions and fugitive dust."

"The DEIS, again is lacking in not addressing ASH dust and gas emissions. Continuous air testing should be provided for at the ashfill/landfill site and also strategic sites in the adjacent communities."

"The particle and gas emissions from the landfill as well as the groundwater should be tested for pollutants on a daily basis and the results made accessible to local civic groups or perhaps the results published each month in the Long Island Advance or other newspaper."

"...I think air monitoring should be done at the site, and I think it should include study for dioxin, organic components and metals."

"Will air quality monitoring occur downwind of the working face? I'm concerned about emanations of microscopic particulate."

7.5.3 Response

The Town intends to implement an air monitoring program in connection with the Landfill Expansion Area. The details of this program, which is intended to measure dust, odor and other air pollutant levels so as to minimize the occurrence of any adverse impacts off site, are still being finalized.

The Town is currently considering the implementation of a proposal for an air monitoring plan submitted by the Waste Management Institute (WMI), Marine Science

Research Center, State University of New York at Stony Brook. This proposal, which may be subject to modification by the Town, is presented in Appendix 11. As noted in Appendix 11, analytical testing will be performed by laboratories of the WMI and the New York State Department of Health, both of which have the necessary State and Federal certifications to conduct the proposed testing. All test results will be made available upon request, but the results will not be routinely published in the newspaper.

Under the proposed program, samples for total suspended particulates (TSP) will be measured at three locations twice each month. Other parameters will be sampled from each location four times during the course of the year. These other parameters are expected to include:

- Particulate metals
- Volatile mercury
- Dioxins/Furans
- Selected Organics Compounds
- Hydrogen sulfide

7.5.4 Comment

The impact of that dust settling on the ground over a couple of decades at least isn't adequately addressed, nor does the DEIS specifically talk about the storm water runoff or leachate impact of that 20-year possible dust accumulation.

7.5.4 Response

Mitigation measures will be employed to ensure that the potential for fugitive dust from windblown ash is minimized (See Responses 7.3.2, 7.3.3 and 7.3.4). Therefore, no significant accumulation of fugitive dust is expected to occur and no significant impacts are anticipated to result from fugitive dust settlement (See Responses 7.5.1 and 7.5.2).

7.5.5 Comment

The new Cell 5 will create an additional source of air pollution in an area already accommodating several sources of air pollution.

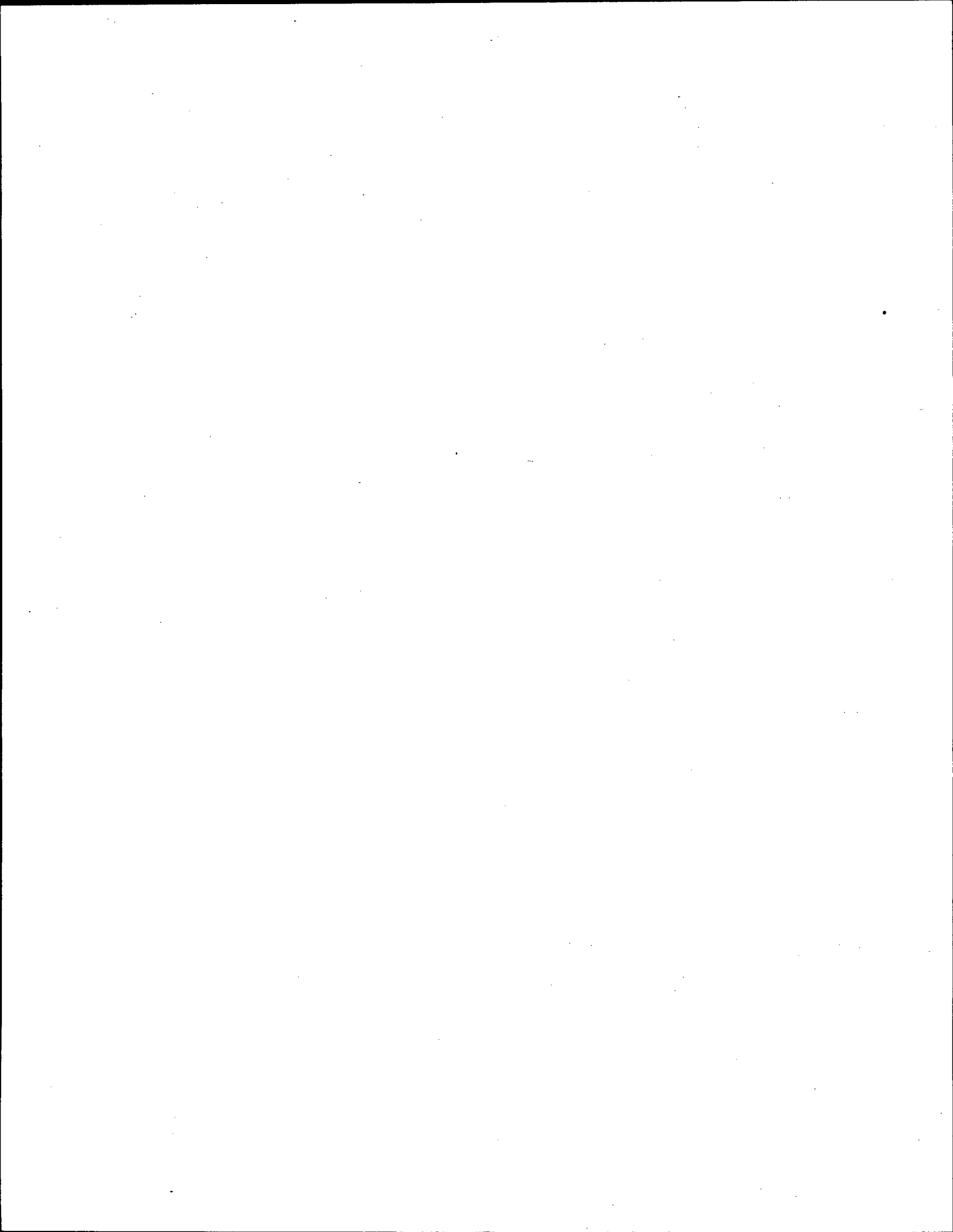
turbulence. The air pollution impact of the source depends on the quantity and drift potential of the dust particles emitted into the atmosphere. Large dust particles tend to settle out nearer the source, while fine particles may be dispersed by wind over greater distances.

Each type of potential dust source is evaluated separately. The result of an AP-42 calculation is an emission factor, such as pounds of dust generated per unit of activity. The emission factor is multiplied by an activity factor, such as tons of material handled per day, to derive a dust emission rate in pounds per unit time for each type of activity.

Emission factors, not all of which are applicable to the Landfill Expansion Area, were utilized in the Hahn study for the following activities:

- Conveyor Transfer Points (not applicable to Landfill Expansion)
- Truck Loading (not applicable to Landfill Expansion Area)
- Leaks from Trucks Traveling to Ash Monofill
- Trucks Dumping at the Ash Monofill
- Landfill Maintenance Activity

**8.0 PROPOSED LANDFILL (CELL 5) DESIGN
AND OPERATIONAL ISSUES**



8.0 PROPOSED LANDFILL (CELL 5) DESIGN AND OPERATIONAL ISSUES

Numerous comments were made regarding the need for the Landfill Expansion Area, the scale of the project, its location, and the proposed operational program. Several commentors expressed general opposition to the proposed Landfill Expansion Area.

8.1 LANDFILL (CELL 5) NEED

8.1 COMMENT

Why is it necessary to develop such a large landfill expansion? Cell 5 is larger than the Town requires, and larger than prudent planning dictates is necessary.

"Looking into a full 18 years of an inter-municipal agreement with Hempstead with an overscoped and apparently undercosted landfill is an economic as well as environmental mistake."

"End the Hempstead deal after 8 years."

"The major difficulty with Cell 5 lies with its planned disposal capacity which our Association feels is well in excess of the Town's foreseeable needs."

"The size of the proposed expansion provides a disincentive to recycle, compost or investigate other environmentally sound approaches to solid waste management."

"My concern is about the future of the Brookhaven Landfill and its effect on me and its effect on our community and my school."

"We are the taxpayers. This is our town. We do not - we do not want this expansion. We want safe, state-of-the-art recycling. We want things that are not going to continue to hurt this environment."

"It smells, ...it's unsightly...my house is losing its value...I never liked the trash for ash deal, but the news of an expansion by this Town Board government made me angry, very, very angry."

"As future adults of this community we would like to let Brookhaven Town know we are totally against having the landfill expansion."

"You have ruined the Hampton Avenue School, real estate values, and our quality of life."

"We want to live and study in a safe and healthy environment and we ask you to leave the land for Cell 5 undeveloped."

"It's our community that you are taking away from us. By expanding this landfill, it's garbage you are placing in our hands."

8.1 RESPONSE

The need for the development of the Landfill Expansion Area is described in specific terms in Section 2.3 of the DEIS. The size of the expansion is projected to have a life of approximately 18 years; within the range of reasonable planning tolerance needed to meet the Town SWMP's identified need of an approximately 20-year landfill.

The capacity of the Landfill Expansion is based upon the projected waste stream for 1995 presented in Figure 2-1 of the DEIS. It has been designed to accommodate the ash from the Hempstead ERF for the full term of the IMA. Under the IMA, the Town's acceptance of ERF Ash is a contractual obligation until January 31, 2000. The IMA also obligates the Town to try, at all relevant times, to obtain all necessary approvals for sufficient landfill capacity until January 2000. The Town has the option to extend the IMA beyond January 2000, which option must be exercised by June 30, 1998. The Town intends to evaluate the arrangement in order to determine whether to exercise that option, but it is premature to conduct that evaluation now, five years in advance. As discussed in Section 7.3 of the DEIS, the sizing of the Landfill Expansion Area represents prudent

planning but in no way requires the Town either to continue to accept the ERF ash or to build the entire facility.

The availability of landfill space will not deter the Town from recycling or waste reduction efforts. The Town will continue to pursue such actions aggressively. The Long Island Landfill Law and NYSDEC regulations place limits on the types of materials which can be landfilled. Waste must be limited to the products of resource recovery, incineration, or composting and downtime waste and untreatable waste. The proposed Landfill Expansion Area has been appropriately sized to accommodate this waste stream. The availability of environmentally sound and economic landfill space under Town control will preclude the Town from being victimized by forces beyond their control, as described in Section 1.3 of the DEIS (See Response 8.2.6 on the issue of alleged interaction between landfill size and recycling).

The Landfill Expansion, as currently proposed, is state-of-the-art, designed to protect the environment, as well as the health and well-being of the general public, to the maximum extent possible. Because it is being designed as a residuals landfill, only wastes that cannot be reused, recycled, processed or burned, will be disposed of. Unlike the waste that has been disposed of in the Existing Landfill, the expansion portion of the landfill will dispose of, almost completely, non-putrescible waste.

8.2 LOCATION/SITING

8.2.1 Comment

The alternative sites discussed in the DEIS are all different locations within the same area. Other sites within the Town should be considered.

"The alternative sites are different spots at the same site."

"...that (in) the original GEIS, the elected officials of this Town gave instruction that alternative sites should be considered in the Town for various parts of the solid waste handling, and when it's said and done, nothing was proposed for sites other than those in the immediate vicinity of the present landfill site."

"Of the three spots at the Brookhaven site, namely to the east, to the west and to the northeast, of the - the site, the one that's been chosen is - is the least undesirable, mainly because of issues of proximity of groundwater to the - to the surface than the other two sites."

"Consider other possible locations not in or near the present site in the Town of Brookhaven for the new cell."

"Alternative sites are really no alternative sites. They're still adjacent to the landfill. The proposed site seems to be considered appropriate because the groundwater is already of poor quality."

"Fundamentally, I would imagine that this problem should at least be distributed somehow among the population of Brookhaven."

"There is no need to open a landfill so close to people's homes. There are thousands and thousands of acres that are miles to the nearest homes that you can put this landfill...Put it in the Pine Barrens where nobody has to live next door to it, if it's so safe. And, if it's no 'so safe' for the Pine Barrens, it's certainly not safe for us to live next door to it. We know we need to put garbage somewhere, but not within "Nose Shot" of it."

"I realize that garbage has to go somewhere, put it away from homes on Long Island. What about where Shoreham is located?"

"Our area already suffers under the operation of a medical waste incinerator at Brookhaven Memorial Hospital, an animal incinerator, the landfill, Gershows metal shredding, as well as the toxic dumping near the water tower adjacent from Woodside Estates."

"It is unfair to burden the community of Brookhaven Hamlet (4 percent of the Town population) with all of the waste for our Town and for Huntington's ash."

"The Cell 5 site was not yet owned by the Town when its Site Analysis Plan was prepared and therefore never went through the proper review process."

8.2.1 Response

As part of the solid waste management planning effort in 1989, a phased multiple screening and ranking process was used to evaluate potential waste management facility sites within the Town. Section 10.6 and Appendix D (Siting Analysis Document) of the 1989 Draft SWMP/GEIS describe in great detail the siting process that was undertaken. The following paragraphs present a summary of the siting study findings, and are included here only as a convenience to the reader.

The initial screening effort identified a bank of 18 potential areas throughout the Town of Brookhaven, each of which was evaluated for its suitability as a possible site for use as a waste management facility location. The Shoreham location, mentioned by one commentor, was not among the 18 potential areas identified. The Draft SWMP/GEIS evaluated all 18 of these areas for their potential development as energy recovery, composting, or landfill facilities, through a systematic and detailed process. This assessment defined the physical attributes and baseline environmental conditions associated with each area, so that determinations of the suitability for development of each type of waste management component at each site could be made.

The Siting Analysis Document concluded that, of the bank of 18 areas assessed, only 7 areas, containing a total of 12 sites, possessed favorable characteristics for potential development as a resource recovery facility, compost facility, or landfill facility. Of these 12 sites, only 2 were identified as having the preferred characteristics necessary for possible development as a new landfill facility.

An area in the Waste Management Facility Site adjacent to the existing solid waste landfill was identified as most suitable for development as a landfill. Subsequent to the initial 1989 study, the town acquired additional land in the Waste Management Facility Site, thus enlarging the original boundaries of that Site. That fact was taken into account when

the 1991 SWMP Update/SGEIS was prepared. The 1991 SWMP Update/SGEIS concluded that the Town's new landfill facility should be constructed on that additional land to the west of the existing solid waste landfill. This choice of location was finalized in the Town's May 1991 Supplemental Statement of SEQR Findings and Decision.

An additional siting update, prepared on behalf of the Town in 1992 by the firm of Dvirka and Bartilucci and included in the DEIS as Appendix 15, demonstrates that the Landfill Expansion Area conforms with the siting criteria and methodologies presented in the 1989 SWMP/GEIS and in 6 NYCRR Part 360, and continues to be the preferred location for the Town's future landfilling disposal capacity needs.

With respect to its proximity to homes, the Landfill Expansion Area far exceeds the minimum requirements of State regulations. Section 360-2.13(a) notes that the minimum horizontal separation distance between a landfill and property line must be 100 feet. The proposed Landfill Expansion Area has a separation distance between 800 to 1,000 feet to property lines of the residences along the western boundary of the Waste Management Facility Site.

One commentator suggested that the area suffers under the operation of a hospital incinerator, an animal incinerator, and metal shredding facility, but presents no indication of what types of impacts these activities are causing. The cited activities or facilities are more than one mile from the boundary of the Waste Management Facility Site. The Landfill Expansion Area is not anticipated to create any environmental impacts that would be cumulative to the impacts of these other facilities.

With respect to the comment that the Landfill Expansion Area should be located in the Pine Barrens, it is noted that the Pine Barrens are an ecologically-sensitive area that overlay the deep flow recharge areas (See Figure 3.3-3 and Figure 3.5-4 of the DGEIS). The Long Island Landfill Law and NYSDEC regulations prohibits the development of new landfill sites within the deep flow recharge area. Various other measures have been undertaken to restrict development within the Pine Barrens. The New York State Legislature has recently enacted a law to afford special protection to the Pine Barrens. For these reasons, selection of an alternative landfill site within the Pine Barrens is not appropriate or feasible.

8.2.2 Comment

The chosen site is located on property that was to be maintained as open space by the Town of Brookhaven.

"The people were led to believe that this (location of the Landfill Expansion Area) was to be open space kept in its natural state as a buffer."

"In 1974 and '75, the people buying into this community were told the long range plans for the landfill included a recreational facility to be built over the landfill upon its closure. We knew that we had purchased homes near a landfill, but we knew for sure that this landfill was going to close."

"This was going to become a beautiful area with playgrounds and a recreational facility."

"The 78 acres planned on being used was to be preserved as open space for a buffer next to the homes, and I don't know what gives the town the right to just change things and make it now going to be used for a dump."

"...The proposed use of this land goes contrary to the original intent that it remain an open and natural buffer area to help ensure the well-being of the many people who make their homes in this part of Brookhaven Town."

8.2.2 Response

In 1988, the Route 347 Realty Company offered to dedicate to the Town of Brookhaven approximately 125 acres of land (including what is now the Landfill Expansion Area) known as the "South Property." This property was originally part of the Regency Oaks Development which was located on both the north and south sides of Woodside Avenue. It was the portion south of Woodside Avenue that was dedicated to the Town. The deed tendered to the Town by the Route 347 Realty Corporation contained no restrictions or covenants as to the future use of the South Property. The Town accepted the deed for

general municipal purposes. The deed contained no restrictions of any kind regarding the use of the dedicated property.

At the time the property was dedicated, counsel for the Town Board stated that it was his belief that the property would be left undeveloped and kept as a natural buffer area. It should be noted, however, that he had neither the intention nor the authority to bind the Town Board in its acceptance of the dedicated property. Ultimately, the Town accepted the South Property free and clear of any covenants. For additional information on this issue, see the January 29, 1993 letter from Assistant Town Attorney, Michael Groben, included as Appendix 17 of this FEIS.

It should be noted that the Town intends to develop a nature trail on a portion of the Waste Management Facility Site east of the Materials Recovery Facility. Preliminary plans for this nature trail are presented in Appendix 19.

8.2.3 Comment

The proposed facility will have adverse visual impact.

"The dump is an eyesore; the proposed additional area is larger and will be higher and even more unsightly."

"The DRAFT EIS does not address the impact of building a second mountain of 230 feet, as such geographical modification to the South Shore will render, as seen from the Fire Island National Seashore and from the Bay areas of the South Shore. The limited visual impact of the study is not complete."

"Consider providing second buffer zone along south side of Sunrise Highway."

"At the Hampton Intermediate School you look out the window and see a mountain of garbage...It's a shame that Brookhaven's most visible landmark is the landfill that's next to our school."

8.2.3 Response

A comprehensive in-field viewshed analysis was performed, and is presented in the DEIS (Sections 3.5.10, 4.5.10, and Appendix 13). The results indicated, with only a few exceptions, that the view of the proposed Landfill Expansion is obstructed by either terrain or vegetation from all directions. Visual impacts associated with the Existing Landfill are being minimized by final capping, hydroseeding, and the establishment of permanent vegetation on closed sections of the Existing Landfill.

Based upon the data gathered during in-field viewshed analysis, the Landfill Expansion would not be visible from points on the Great South Bay or from Fire Island until the final years (16-18) of landfilling. Even when the landfill reaches this stage, it is not expected to be conspicuous from these distant areas (Great South Bay - 3 to 5 miles, and Fire Island - 6 to 7 miles). In order to mitigate any potential visual impacts, the Landfill Expansion Area will be covered and vegetated. Thus, it will not be discernible as a landfill from these distances.

Foreground views, particularly from vantage points on Sunrise Highway, will be adversely affected by the development of the Expansion. To mitigate this impact, a vegetative buffer will be planted in the area between the proposed landfill and the highway.

The Landfill Expansion, because it will dispose of mostly residual waste, will have less potential for litter and related visual problems.

In response to concerns raised during the comment period on the DEIS, the Town will implement various mitigation measures in Horizon Village which are intended to limit the visibility of the Existing Landfill and the Landfill Expansion Area. These mitigation measures are discussed in Response 5.0.

8.2.4 Comment

"The DEIS provides no quantification data or analysis to show the new Cell 5 is not in the deep recharge zone."

8.2.4 Response

The deep flow recharge area is defined in the Long Island Landfill Law (ECL-27-0704) as consisting of Hydrogeologic Zones I, II and II, which were developed as part of the "Long Island Comprehensive Waste Treatment Management Plan" (Long Island

208 Study, 1978). According to this definition, and the information contained in the 208 Study, the Landfill Expansion lies 1.7 miles south, and 3,500 feet east of the deep flow recharge boundary, in an area of transition between recharge and discharge.

This determination, with which NYSDEC concurs, constitutes compliance with the Long Island Landfill Law (see Response 6.2.3).

Although not required under the Long Island Landfill Law, groundwater elevation measurements were obtained from two Upper Glacial and Magothy aquifer well clusters in the vicinity of the Landfill Expansion Area, one located 2,500 feet east, and 200 feet downgradient of the Existing Landfill, and the second located northeast of the Existing Landfill. Data from these wells clearly confirm the conclusions of the Long Island 208 Study. A more detailed discussion of how hydrogeologic data confirm the fact that the Landfill Expansion Area is not within the Deep Flow recharge area is contained in Appendix 13 of this FEIS.

8.2.5 Comment

Size/Incremental Development. The New York State Department of Environmental Conservation should consider granting the Town of Brookhaven only limited or incremental capacity.

"And I can just echo what these other people have said about more recycling, so perhaps it won't be so necessary for such a large expansion."

"The Town should reject the expansion proposal. Instead, focus far more on recycling as an alternative, and we believe the State Department of Environmental Conservation should only consider granting Brookhaven the very limited option on an incremental basis of landfilling what's remaining after its recycling programs."

"A critical problem with the Cell 5 expansion proposal is its magnitude, its enormous size."

"And why an 18-year capacity? Hopefully technology will help us to reduce our waste stream before 18 years."

"We strenuously object to the size of the proposed expansion project which assumes that the Town of Brookhaven will continue to trade raw garbage for ERF ash through the year 2009."

8.2.5 Response

As described in Section 2.5.1 of the DEIS, Construction Schedule and Sequencing, the landfill will be developed and implemented in phases. The expansion will be divided into nine phases, and the development plan will be based upon incremental phase construction, fill progression, and closure; commencing from the south and proceeding north.

Each phase, or cell, will be designed independent of the other cells, primarily for the purpose of monitorability. However, if the entire Landfill Expansion is required to cease operating, it may do so at the close of operation of any one of the cells. In addition, an individual cell may operate for a longer period than that which has been estimated in Table 2-1 of the DEIS, if more waste is recycled than anticipated. The NYSDEC typically issues Solid Waste Management Facility permits for a period of 5 to 10 years. At a minimum, the Expansion Landfill will be issued two incremental operating permits. Increased waste reduction, reuse, and recycling efforts could further increase the number of permit renewals required, as well as extend the useful life of each cell and the Landfill Expansion, as a whole.

By seeking approvals for the Landfill Expansion Area, the Town is not committing itself to constructing the entire facility. The incremental development of the Landfill Expansion Area will be the subject of future decision-making by both the Town and the NYSDEC. Prior to the development of each of the nine phases of the Landfill Expansion Area, the Town will decide whether and when to build the next phase. It will make that decision based upon the need for and anticipated cost of the next phase, among other factors.

The NYSDEC will also regulate certain aspects of the future development of the Landfill Expansion Area. It will regulate ongoing operations under terms of a permit. Prior

to commencement of construction and operation of each phase of the Landfill Expansion Area, detailed design specifications and construction certification documents must be submitted to the NYSDEC for their review and approval.

This incremental design, review and approval process is expected to result in the Landfill Expansion Area incorporating the most current advances in environmental control features, and will ensure that its sequential development over time will be in a cost-effective and environmentally-sound manner.

8.2.6 Comment

The size of the proposed Landfill Expansion will be a disincentive for the Town to pursue an aggressive recycling program.

"As long as town officials, whether it's here in Brookhaven or elsewhere, can rely on large scale disposal capacity, then there's little incentive from a disposal perspective to truly maximize the Town's recycling efforts."

8.2.6 Response

The Town disagrees that the lack of available disposal capacity would result in higher levels of waste reduction and recycling. Instead, the lack of available disposal capacity to be provided by the Landfill Expansion Area would increase the cost of disposal for residues from Town recycling programs and for non-recyclable waste generated in the Town. Furthermore, the lack of available disposal capacity under the control of the Town could have a variety of adverse consequences as discussed in the DEIS (see Page 1-7).

Laws and regulations are becoming increasingly more stringent with regard to the siting and permitting of solid waste management facilities, particularly landfills. In addition, the time required to perform the necessary studies and to design these facilities, along with their associated costs, becomes a disincentive to developing short- and medium-term disposal facilities. The longer a facility can be operated, the more cost-effective it becomes. If recycling, waste reduction, and reuse are means which can be employed to extend the operating life of a solid waste facility, then incentives to pursue those means should be employed.

The size of the proposed Landfill Expansion Area will not be a disincentive for the Town to pursue an aggressive recycling program. To the contrary, there will be an economic incentive for the Town to maximize its waste reduction and recycling plan because, by doing so, the Town can avoid or postpone capital expenses associated with the phased liner extensions which are part of the Landfill Expansion Area. This is possible because the baseliner beneath the Landfill Expansion Area will not be constructed all at once, but instead, will be developed in phases over time as it is needed.

NYSDEC Commissioner Jorling recognized this concept in his Interim Decision with respect to the Mill Seat Landfill in Monroe County.

"Landfills are generally constructed in phases and therefore do not incur all capital costs as an initial expense but rather build capacity on an as needed basis. As a rule, they have a much lower ratio of capital costs to operating costs than do resource recovery facilities. Therefore, there is less economic incentive to compete for solid waste. In fact, there are positive economic incentives to avoid accepting more solid waste than necessary because excess solid waste increases operating expenses and reduces capacity." (Interim Decision, July 2, 1991, p.4)

There are other reasons, besides the economic incentive associated with extending landfill life, why the Town will not be dissuaded from pursuing an aggressive waste reduction and recycling program. The Long Island Landfill Law and NYSDEC regulations only permit the products of resource recovery, incineration, or composting, downtime waste, and untreatable waste to be disposed of in landfills on Long Island. The Town's Solid Waste Management Plan and Comprehensive Recycling Analysis and Recycling Plan commit the Town to pursue the waste reduction and recycling programs enumerated therein. New York State law (GML Section 120-aa) requires the Town to implement mandatory recycling programs for those materials for which economic markets exist. It is worthy of note that the Town of Brookhaven is currently pursuing recycling programs which cost more than disposal, even when the market value of the material is considered.

For all of these reasons, the proposed Landfill Expansion Area will not be a disincentive for recycling in the Town of Brookhaven.

8.2.7 Comment

Note that redesigning the shape/footprint of the landfill will move the footprint closer to the Station Road Wellfield.

8.2.7 Response

Comment noted. The Town is in agreement with this comment, which refers to the alternative design for a 13-year landfill described in the DEIS.

8.3 OPERATIONAL PROGRAM

8.3.1 Comment

Odor control and gas management should be addressed in connection with the proposed Landfill Expansion.

"It is possible that sometime in the future, the Hampton Avenue School will be severely affected by the odors from the landfill and the Cell 5 expansion."

"If new flares or combustion gas burners are included in the design, these will require NYSDEC Air Permits."

"Odors, I think it would be nice if the documents addressed a little less casually than has been done."

"How will odor from C&D debris be managed?"

8.3.1 Response

Comments addressing odors emanating from the Existing Landfill have been responded to in Response 3.1. No additive impacts are expected to occur because the Existing Landfill will be substantially closed by the time the Landfill Expansion Area is placed into service. Odors from the Landfill Expansion Area will not create the same types of problems as have occurred at the Existing Landfill because the waste that will be landfilled will be primarily non-putrescible. Putrescible waste will be disposed of in the Landfill Expansion Area only during times when the Town's recycling and materials

processing facilities, or the Hempstead ERF, experience shut downs, whether under emergency conditions or for scheduled maintenance.

However, as a mitigating measure to control any gases that form, and their subsequent odors, a system of collection pipes, vents, and monitoring wells, have been designed and are discussed in the Engineering Report of the Part 360 Solid Waste Management Facility Permit Application. In addition, the daily cover which will be applied to all waste (including C&D debris) except ERF Ash, will also help mitigate potential odors.

While none are proposed as part of the Landfill Expansion Area, if new flares or combustion gas burners (turbines) are proposed in the future, appropriate authorization for their operation will be secured from the Air Pollution Control (Resources) Division of the NYSDEC.

In addition, the Town is proposing an air monitoring program (reference Response 7.5.3) that will not only monitor fugitive ash dust, but will also monitor for hydrogen sulfide and other odor-causing compounds.

8.3.2 Comment

"The air quality data was obtained from monitoring at Babylon and Eisenhower Park. The substances monitored for are particulates such as nitrogen oxide, carbon monoxide, ozone and lead. I really don't know whether these - this data reflects the air quality above the landfill, and what about other gases, volatile organic compounds and heavy metals not tested for?"

8.3.2 Response

The Comment refers to information presented in Section 3.3.2 of the DEIS. Ambient air quality data is collected at specific locations throughout Long Island and the Town of Brookhaven by the New York State Department of Environmental Conservation and the Suffolk County Health Department. The locations at Babylon in Suffolk County and Eisenhower Park in Nassau County, are the only stations which continuously monitor air quality. Other stations in the region manually collect other air quality parameters periodically during the calendar year. Monitoring station data is maintained for purposes of determining compliance with national and state air quality standards for the following criteria pollutants:

- Acid Deposition
- Carbon Monoxide
- Inhalable Particulates (PM-10)
- Lead
- NO_x
- Ozone
- SO₂
- TSP

These data are believed to be reasonably representative of the quality of the air in the vicinity of the Landfill Expansion Area. Other monitoring of existing landfill gas emissions is discussed in Response 3.2.1. In order to mitigate and avoid any potential for odor or health impacts from fugitive dust or other air pollutant emissions, the Town is also proposing to institute an air pollutant monitoring program. This program is described in Response 7.5.4 and in Appendix 11.

8.3.3 Comment

The proposed facility should not be exempt from using daily cover on ash. The DEC should also stipulate the characteristics of the cover material. Other alternatives to daily cover could be explored, such as foam, plastic sheeting, and smaller quantities of soil. (see also Comment 7.3.2)

"You ask for an exception from the Part 360 requirement for placing the daily cover on areas to be filled with ash, thereby minimizing use of valuable landfill space without significant environmental impact."

"The DEIS, October '91, 2-2, shows that only sand will be available for the daily and interim cover layers. We request the DEC to stipulate exactly what materials should comprise the cover materials."

"Why...should the residents that live next to the landfill take a chance with the town not covering the ash everyday?"

"Why is the Town taking an exemption to the daily cover requirement when good landfilling techniques recommend it?"

"What will the cover material consist of?"

"What's the impact of increased leaching potential?"

8.3.3 Response

The proposed Landfill Expansion will be designed as a residuals landfill, capable of disposing not only ash from the Hempstead Energy Recovery Facility, but residual wastes from composting, the Town's MRF, and other Town recycling and processing efforts. Daily cover is required for the disposal of the solid wastes under 6 NYCRR Part 360, but the NYSDEC has granted variances from this requirement in the case of ash disposal (See Responses 7.3.2 and 7.3.3).

Good landfill management practice does not require the application of daily cover on ash residue. NYSDEC has granted numerous exemptions from the requirements for daily cover on ash, including the Babylon Landfill, Sprout Brook Landfill (Westchester County) and the Al Turi Landfill.

As noted in Response 6.4, the purpose of daily cover application is to ensure the control of vectors, flies, odors, blowing litter, and scavaging. With respect to ash, the primary objective of daily cover is to prevent wind-blown ash. This could be accomplished, should the ash become dry, with equal effectiveness by applying water. The active area will be kept as small as possible, yet large enough to be effectively managed using heavy equipment. As noted in Response 7.3.2, the operational working face will be limited to 40 by 100 feet in size.

The exemption from the daily cover requirement will provide the following benefits:

- Space savings (almost 10 percent of air space)
- Material savings (about 50 percent savings)
- Less equipment and lower operation cost

Alternative cover materials, such as foam and hydrophobic fabric, may be evaluated for effectiveness in connection with the operation of the Landfill Expansion Area.

8.3.4 Comment

How will it be determined when dust generation is a problem, and who will respond to public input to correct problems such as dust and odor?

8.3.4 Response

As noted in Response 7.5.1, the Town proposes to conduct fugitive dust monitoring around the site. In the event that dust levels exceed the established thresholds, appropriate response action will be initiated.

It will be the Town of Brookhaven, Department of Waste Management's responsibility to report such conditions, and to respond to, as well as correct, activities causing these conditions. It will also be the responsibility of the Town to respond to any complaints of fugitive dust, should they occur.

8.3.5 Comment

Have staffing requirements been considered?

"How is this going to be managed? Who is going to be responsible? Who's going to be responsible at each phase? What kind of staff is necessary? What special qualifications and manpower are required? How are the project costs, its progress and its environmental test results going to be monitored and reported during construction and operation?"

"...if the Town is intent on following through with all of (the) safeguards delineated in the DEIS, we ask, have operating procedures been drawn up? Have staffing requirements been considered? Has every cost been calculated?"

"The DEIS discusses leachate and drainage problems, soil erosion, groundwater and air pollution, as well as odors and gas generation. It fails

to state how these problems will be controlled. How does the Town intend to manage this undertaking? We would suggest a comprehensive management/staffing plan be included in a DEIS supplement."

"The Town's ability and resolve to implement and enforce the procedural safeguards that the DEIS proposes will be found to be inadequate."

8.3.5 Response

Details of the management and staffing plans for the Landfill Expansion are presented in the Operations and Management Plan of the Engineering Report, which is part of the Part 360 Solid Waste Management Facility Permit Application submittal, incorporated by reference into this FEIS. The Operation and Maintenance Plan (O&M Plan) discusses pertinent aspects of the Landfill Expansion Area intended to ensure compliance with applicable regulations. It includes a description of personnel, equipment, procedures and controls which are required to effect efficient management of waste disposal operations in the Landfill Expansion Area. The Town will be required to operate the Landfill Expansion Area in accordance with the O&M Plan as a condition of its NYSDEC permit.

The O&M Plan referenced above includes detailed discussion regarding the following issues:

- Management
- Personnel Requirements
- Key Personnel Responsibility and Duties
- Employee Training Program
- Inspection and Maintenance Procedures
- Emergency Response Procedures
- Facilities and Equipment
- Operational Controls, including access and traffic flow
- Waste Quantity and Characteristics
- Waste Handling Procedures
- Severe Weather Conditions
- Phased Development Plan for the Site

- Cover Material Management
- Leachate Management
- Environmental Monitoring
- Recordkeeping and Reporting

The staffing requirements for the Landfill Expansion Area have been fully considered in the connection with the preparation of the O&M Plan and this FEIS.

8.3.6 Comment

How much leachate capacity will be available in the event of excessive rainfall?

"How much leachate collection capacity will be available when and if a major storm should hit this area and deposit an excessive amount of rainfall?"

8.3.6 Response

The Landfill Expansion Area and its various proposed collection systems have been designed to contain and collect an intense precipitation event. The system has been designed to retain an 8.7-inch precipitation event, which is in excess of the 100-year, 24-hour rainfall. The system is also capable of removing all the liquid precipitation associated with a 5.2-inch (24-hour) event in less than 7 days. It should be noted that these proposed designs exceed the State's requirements, as referenced in 6 NYCRR Part 360-2.13(g)(i).

The leachate tank system, with a maximum storage capacity of 965,000 gallons, will be operated to maintain levels at less than one-half capacity under normal operating conditions. In this way, the Landfill Expansion Area will be able to handle significant precipitation events without having the potential for a leachate release to the environment.

In addition, the design and operation of the Landfill Expansion Area will minimize the generation of leachate in several important ways. Sequential filling of the Landfill Expansion Area will occur, the objective of which is to achieve final grade as soon as possible. As final grades are achieved for each phase of the Landfill Expansion Area, precipitation falling on those areas will generally not come in contact with the landfilled

waste. This non-contact precipitation will be handled as stormwater run-off and not leachate.

Leachate generation is further limited within each phase or subcell of the Landfill Expansion Area. As new liner area is constructed, and waste placement commences, run-off collected from clean areas of the liner is managed as storm water. This is accomplished by including valves on the leachate collection pipes and by the use of operational berms within each sub-cell.

8.3.7 Comment

What will happen if leachate data indicates the possibly of a problem?

8.3.7 Response

Leachate will be monitored on a quarterly basis to determine its constituents, and how they vary with time. The proposed Landfill Expansion Area will also be monitored on a quarterly basis to determine if the mitigation features designed into the facility are operating properly. To determine if leachate is being properly contained and collected, monitoring points have been designed in the secondary leachate collection system, as well as at specified groundwater locations in the vicinity of the Landfill Expansion Area.

Leachate data will be compared on a quarterly basis with data collected from the secondary leachate collection system and the specified groundwater monitoring locations. If leachate is detected in the secondary leachate collection layer, a determination will be made as to whether the rate at which leachate is entering this layer exceeds the allowable "action leakage rate". If it does, then an effort will be undertaken to determine the area where the leak is occurring, and it will be repaired.

If leachate is detected in groundwater, then measures specified in 6 NYCRR Part 360-2.20 will be implemented. These measures include a series of activities involving the NYSDEC, starting with more frequent monitoring for specific parameters to determine if a problem exists, assessing whether corrective measures will be necessary, selecting the appropriate corrective measure, and implementing the selected corrective measure.

See also Response 6.3.2.

8.3.8 Comment

"How will you repair the leachate collection system if the collection system pipes under the landfill become clogged?"

8.3.8 Response

Leachate collection system cleanouts will be installed for the purpose of allowing the collection piping to be cleaned periodically to prevent clogging from occurring. Cleaning will be performed with hydraulic jets, pipe cleaning pigs, or mechanical whips with flushing. The design concepts proposed for the Landfill Expansion Area have been implemented successfully at numerous other facilities.

If a leachate collection pipe should collapse, it will still remain intact (i.e., unbroken), due to the flexible nature of the pipe. The pipe can be re-opened using a vibrating bullet-shaped probe especially designed for this type of work. Access to the pipe line will be provided from channels on both ends of the collection piping.

The leachate collection piping will be designed to operate under the loads that are associated with the materials to be landfilled. The pipes that will be used are slotted PVC pipes with a substantial wall thickness. These types of pipes, as well as the engineering methods of design, have been shown to perform as anticipated for many types of installations, including a large number of landfills. Therefore, no crushing of pipes is expected.

8.3.9. Comment

More details should be provided regarding the leachate pumping system.

8.3.9 Response

The pumping system for the Landfill Expansion is designed to pump at a maximum rate of 120 gpm per cell. This maximum rate has been determined based on the removal of all incident rainfall from a 5.2-inch event within 7 days. This requirement is associated with a newly opened cell with a very limited amount of waste placed within, that encounters a 10-year, 24-hour rainfall event. such that no runoff occurs. This is an extreme condition, with low probability of occurrence.

The pumps for the primary leachate collection in active cells are expected to be 2 hp, 3-phase, 440 volt units, modified for this application by EPG Companies. Manufacturers' literature for these pumps is provided in Appendix 15, for more detailed information. No overloads or overheating are anticipated with these pumping units. At least one spare replacement pump of each type will be kept on site.

Standby power is not planned for the leachate collection system because power outages at the site have not been a problem to date. In the event of temporary power loss, leachate will accumulate within the cells. As mentioned in Response 8.3.6, a large amount of leachate storage capacity is available within the cells for emergency use. However, in the event of a long-term outage, backup generators could be brought on site.

Additional details are provided in the Engineering Design Report and Plans, which are incorporated by reference in this FEIS.

8.3.10 Comment

More details should be provided on operational procedures, especially those that will be undertaken to mitigate fugitive dust emissions and odors in these sections of the landfill where bypass waste will be disposed.

8.3.10 Response

Details on the operational procedures of the Landfill Expansion are presented in the Operations and Maintenance Plan in Section 6 of the Engineering Report (incorporated by reference to this FEIS) as part of the Part 360 Solid Waste Management Facility Permit Application. The Operations and Maintenance Plan discusses pertinent aspects of the operation and maintenance program proposed for the Landfill Expansion Area to maintain compliance. The major components of the Operations and Maintenance Plan include:

- Personnel
- Facilities and Equipment
- Operational Controls
- Waste Quantities and Characteristics
- Waste Handling Procedures
- Site Development Plan

- Cover Material Management
- Leachate Management
- Environmental Monitoring Plan
- Recordkeeping and Reporting

Some specific information regarding how fugitive dust and odor have been presented earlier in this document, in Sections 7.5 and 8.3.1, respectively.

8.3.11 Comment

What if sludge begins to emanate from the liner? What will prevent the landfill from becoming a mud slide?

8.3.11 Response

The Town is not sure what point the commentor is trying to make. The comment seems to imply that the leachate collection system will clog, and that the liner will fill with leachate until it is discharged over the containment berms or through slope failure.

Response 8.3.8 presents discussion of how the clogging of the leachate collection will be prevented. The structural integrity of the Landfill Expansion Area has been carefully evaluated as part of its engineering design. This analysis is presented in Section 3.6 of the Engineering Design Report, which is incorporated herein by reference. Critical conditions which were analyzed include:

- Stability of 3H:1V excavation slope
- Baseline stability during construction
- Operational stability
- Overall slope stability, including seismic conditions
- Final cover slope stability

These stability analyses demonstrate the structural integrity of the Landfill Expansion Area.

Dewatered sewage sludge is not ordinarily delivered to the Existing Landfill, or expected to be regularly delivered to the Landfill Expansion Area. Sludge from the

Southwest Sewer District Wastewater Treatment Plant is usually incinerated, with the resulting ash delivered to the Existing Landfill. Dewatered sludge is only delivered to the Existing Landfill when the sludge incinerator is not operating. NYSDEC regulations require that the landfilled sludge be dewatered to a minimum of 20 percent solids prior to delivery.

8.3.12 Comment

Note that design and construction of a leachate storage tank is required pursuant to Part 360-2.7(c)(6).

8.3.12 Response

Comment noted. As described in Section 8.3.6 of this document, a 965,000-gallon leachate storage tank has been designed for the Expansion Landfill. The tank has been designed pursuant to 6 NYCRR Part 360-2.7(c)(6), and draft construction plans and specifications have been submitted to NYSDEC for review.

8.3.13 Comment

Note that a SPDES permit for stormwater will be required and that the DEC will not issue general permit for new stormwater discharges associated with activity from facilities that will require solid waste permits.

8.3.13 Response

The stormwater discharges from both the construction and operation of the landfill will only be to groundwater. The federal government does not regulate discharges to groundwater, and the New York State Department of Environmental Conservation (NYSDEC) has not yet published any rules or regulations concerning stormwater discharges. No NYSDEC program, as currently implemented, requires the NYSDEC to permit stormwater discharges to groundwater. NYSDEC does have discretion to permit these discharges on a case-by-case basis. In the event NYSDEC requires a permit for the stormwater discharges to groundwater, a permit application will be submitted.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

9.0 ECOLOGICAL ISSUES

9.1 VEGETATION

9.1.1 Comment

The FEIS should provide a comparison of the plant communities on the site with the information contained in the book entitled Ecological Communities of New York State, by Carol Reschke, published in March 1990 by the New York Natural Heritage Program part of the NYSDEC.

9.1.1 Response

Three plant communities exist within the Waste Management Facility Site west of the Existing Landfill. These include oak-pine, pitch pine, and scrub/shrub communities. These three communities can be likened to the pitch pine-oak forest, the pitch pine-oak-heath woodland, and the pitch pine-scrub oak barrens communities, respectively, as described in Ecological Communities of New York State by Carol Reschke. The pitch pine-oak-heath woodland is the prevailing community in the Landfill Expansion Area.

The pitch pine-oak forest community description matches well with species and conditions encountered in the oak-pine cover areas. Pitch pine is the prevalent species, along with scarlet and white oak. Generally, pitch pine is spaced amidst the oaks and, sometimes, emerges above the oaks as a partial canopy. Shrub species included in the community description and encountered in the field include blueberry and scrub oak. Bracken fern is listed by Reschke as occurring in a relatively sparse herbaceous layer; these conditions were confirmed during the field survey.

The pitch pine-oak-heath woodland closely correlates to those areas indicated as re-vegetating pitch pine stands. Most of the same species mentioned as occurring in the pitch pine-oak forest community also are found in this community. Pitch pine, however, is clearly dominant. Regenerating pine stands correspond to those areas mentioned in the community description as having a sparse shrub layer. Conversely, the mature pine stands have a dense shrub layer because the canopy cover can be sparse as there are many less stems-per-acre encountered.

Along the eastern end of the Waste Management Facility Site, a shrub/shrub or pitch pine-scrub oak barrens exists. Again, pitch pine is dominant, but the percent cover varies

widely. Throughout this cover type are many small grassy areas. This characteristic is also described by Reschke in the pitch pine-scrub oak barrens community description.

9.1.2 Comment

Three plant species found on the site are classified as "exploitably vulnerable" under 6 NYCRR Part 193.3 including, American bittersweet, spotted wintergreen, and trailing arbutus.

9.1.2 Response

These species are listed in 6 NYCRR 193.3 as exploitably vulnerable. Exploitably vulnerable species are species which are likely to become threatened in the near future throughout all or a significant portion of their range within the State, if causal factors continue unchecked. Spotted wintergreen and trailing arbutus were commonly found in the oak-pine forest area and semi-mature pitch pine forest areas both on and off the Waste Management Facility Site. These areas are not included in the current development plans for the Landfill Expansion Area and, subsequently, are not expected to be impacted by the proposed action. American bittersweet was found in localized situations in the mixed hardwood area in the northern part of the Landfill Expansion Area (see Figure 3-27 of the DEIS). Typically, the distribution of this species is impaired by collection of its fruit. However, due to the isolation of the areas where this species was found, the exploitation of this species by harvesting is not likely. In the event that development in this area is required, transplanting of this species could be conducted to allow this species to survive on an undisturbed parcel.

9.1.3 Comment

Two rare plant species, as defined by the State in 6 NYCRR Part 193.3(e), were described in the DEIS as being either on the facility site or in the surrounding area. The location of these two species, Stueve's bush clover (Lespedeza stuevei) and Nuttall's lobelia (Lobelia nuttalli), should be provided in the FEIS on a map and in the text, and it is recommended every effort should be made to preserve them. It is recommended that potential adverse environmental impacts to these species should be discussed. Consideration should be given to attempting to transplant these to

other areas of the site which will never be disturbed and to providing for the care of these plants after transplantation.

9.1.3 Response

The two rare plant species noted by the commentor were tentatively identified along the western property boundary of the Waste Management Facility Site. Although precise locations were not recorded during the field survey because of Federal and State laws preventing specific identification of rare, threatened and endangered species, it is noted that the approximate locations of these species are several hundred feet west of the proposed Landfill Expansion Area. Therefore, no direct impact to this area is expected as a result of landfill expansion.

9.1.4 Comment

Several species were observed on the site for which the genus is identified but not the species. Several of these genera have species which are listed by the State as either being endangered, threatened or rare. These are as follows:

- **Milkweed - Asclepias spp.**
- **White aster - Aster spp.**
- **Carex - Carex spp.**
- **Tick-trefoil - Desmodium spp.**
- **Equisetum - Equisetum spp.**
- **Smartweed - Polygonum spp.**
- **Cinquefoil - Potentilla spp.**
- **Goldenrod - Solidago spp.**

It is suggested that every effort be made to identify these plants to the species level in order to confirm that they are or are not endangered, threatened or rare. If any of these are confirmed as endangered, threatened or rare it is recommended their location be provided in the FEIS both on a map and in the text and effort made, if possible, to preserve them. It is also suggested that potential impacts to these specific plants be discussed in the FEIS.

9.1.4 Response

Specimens of the above plant species were not retained at the conclusion of Wehran's field study; consequently further identification is not possible. However, these species were noted outside of the Landfill Expansion Area. Therefore, implementation of this project is not expected to negatively impact these species.

9.1.5 Comment

How will vegetation be planted during subfreezing episodes?

9.1.5 Response

Vegetation will not be planted during subfreezing episodes. Planting will occur only during appropriate weather conditions. A description of the proposed planting periods as well as the method of planting, is presented in the Part 360 Solid Waste Management Facility Permit Application for the Landfill Expansion, which is incorporated by reference in this FEIS.

9.2 WILDLIFE

9.2.1 Comment

It is recommended that more detail be provided in regard to wildlife including information on the abundance of species observed and distribution of species over the site. In addition, it is recommended that the specific habitat requirements and behavioral aspects of the following observed species be provided in the FEIS in narrative form to provide for a more comprehensive review:

- A. Red-tailed hawk**
- B. Turkey vulture**
- C. Killdeer**
- D. Northern bobwhite**
- E. Prairie warbler**
- F. Yellow warbler**
- G. Black-throated green warbler**
- H. Barn swallow**

- I. **Wood thrush**
- J. **Carolina wren**
- K. **Brown thrasher**
- L. **Canada warbler**

It is also recommended that a detailed discussion of potential adverse environmental impacts to these species be provided.

9.2.1 Response

Information in the DEIS on avian species was presented so that the specific habitat was identified in Table 3-23. This table is amended in this FEIS to present the relative abundance of each species. Since the field survey was conducted during the month of June, all species are presumed to be in, or near, suitable breeding habitat.

Specific behavioral aspects of wildlife species were not recorded during Wehran's field survey. However, due to the occurrence of the field work during the breeding season, the majority of species would be expected to be engaged in the following activities: breeding, mate selection, territory defense, rearing of fledglings, and food gathering/foraging. Further definition of specific behavioral activities would require additional field investigations.

Habitat requirements for the list of species presented in the comment are listed in Table 9-1. These habitat descriptions are based on a limited literature review and do not represent all conditions under which a particular species may be encountered.

It should also be noted that most of the Landfill Expansion Area is currently barren; none of the species listed above were observed in the Landfill Expansion Area. By maintaining the existing buffer surrounding the Landfill Expansion Area, no further impact to the above-listed species is anticipated.

9.2.2 Comment

The American toad is listed as a species observed on the site. However, our Division's own field observations along with information obtained from other agencies and private local ecological organizations indicates that the American toad is not

Table 3-23
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
WILDLIFE SPECIES OBSERVED ON THE FACILITY SITE AND
IN THE SURROUNDING AREA

Common Name	Scientific Name	Habitat Type					
		MH	O/P	PP	SS	LF	FLD
BIRDS							
Red-winged blackbird	<i>Agelaius phoeniceus</i>						N
Mallard*	<i>Anas platyrhynchos</i>						
Canada goose*	<i>Branta canadensis</i>						
Red-tailed hawk	<i>Buteo jamaicensis</i>					N	N
Northern cardinal	<i>Cardinalis cardinalis</i>	N	N				
American goldfinch	<i>Carduelis tristis</i>			N			
House finch	<i>Carpodacus mexicanus</i>	N	N				
Turkey vulture	<i>Cathartes aura</i>					S	
Killdeer	<i>Charadrius vociferus</i>					N	
Northern bobwhite	<i>Colinus virginianus</i>	N	N				
American crow	<i>Corvus brachyrhynchos</i>					C	
Fish crow	<i>Corvus ossifragus</i>					N	
Blue jay	<i>Cyanocitta cristata</i>	C	C	N	N		
Mute swan*	<i>Cygnus olor</i>						
Prairie warbler	<i>Dendroica discolor</i>			N			
Yellow warbler	<i>Dendroica petechia</i>	N		N			
Black-throated green warbler	<i>Dendroica virens</i>	N					
Gray catbird	<i>Dumetella carolinensis</i>		C	C	C		
Common yellowthroat	<i>Geothlypis trichas</i>	N	N	N	N		
Barn swallow	<i>Hirundo rustica</i>					S	
Wood thrush	<i>Hylocichia mustelina</i>	N					
Northern oriole	<i>Icterus galbula</i>	S					
Herring gull	<i>Larus argentatus</i>					C	
Song sparrow	<i>Melospiza melodia</i>			N	N		
Northern mockingbird	<i>Mimus polyglottos</i>		N	N	N		
Osprey**	<i>Pandion haliaetus</i>						
Black-capped chickadee	<i>Parus articapillus</i>		C	C			

HABITAT TYPES:

RELATIVE ABUNDANCE:

MH - Mixed Hardwoods

C - Common

O/P - Oak/Pitch Pine Mix

N - Not common, but more than one sighting

PP - Pitch Pine

S - Single observation

SS - Scrub Shrub

LF - Landfill (i.e. Existing Solid Waste Landfill and Proposed Landfill Expansion Area)

FLD - Open Field

* Species observed in Southaven County Park

** Species observed off site

SOURCE: Ecological Field Survey, Town of Brookhaven Landfill, Wehran-New York, Inc., June 1992

Table 3-23
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
WILDLIFE SPECIES OBSERVED ON THE FACILITY SITE AND
IN THE SURROUNDING AREA

Common Name	Scientific Name	Habitat Type					
		MH	O/P	PP	SS	LF	FLD
BIRDS							
Downy woodpecker	<i>Picoide pubescens</i>	S					
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>		C	C	C		
Common grackle	<i>Quiscalus quiscalus</i>					N	
Field sparrow	<i>Spizella pusilla</i>	C					C
European starling	<i>Sturnus vulgaris</i>					C	C
Carolina wren	<i>Thryothorus ludovicianus</i>			C			
Brown thrasher	<i>Toxostoma rufum</i>			N			N
American robin	<i>Turdus migatorius</i>	C	C	C			
Eastern kingbird	<i>Tyrannus tyrannus</i>			S			
Canada warbler	<i>Wilsonia canadensis</i>		S				
Mourning dove	<i>Zenaidura macroura</i>		C	C			C
White-throated sparrow	<i>Zonotrichia albicollis</i>			S			
REPTILES AND AMPHIBIANS							
Fowler's toad	<i>Bufo Woodhousei var fowleri</i>		S				
Eastern garter snake	<i>Thamnophis sirtalis</i>		S				
MAMMALS							
Domestic dog	<i>Canis familiaris</i>		N	N			
Domestic cat	<i>Felis domesticus</i>		N	N			
White-tailed deer	<i>Odocoileus virginianus</i>		C	C			
Mole	<i>Scalopus spp.</i>		S				
Eastern cottontail	<i>Sylvilagus floridanus</i>	C	C	C			
Eastern chipmunk	<i>Tamias striatus</i>		C	C			
Red fox	<i>Vulpes vulpes</i>		S				
Gray squirrel	<i>Sciurus carolinensis</i>	S					

HABITAT TYPES:

MH - Mixed Hardwoods
O/P - Oak/Pitch Pine Mix
PP - Pitch Pine
SS - Scrub Shrub
LF - Landfill (i.e. Existing Solid Waste Landfill and Proposed Landfill Expansion Area)
FLD - Open Field

RELATIVE ABUNDANCE:

C - Common
N - Not common, but more than one sighting
S - Single observation

* Species observed in Southaven County Park
** Species observed off site

SOURCE: Ecological Field Survey, Town of Brookhaven Landfill, Wehran-New york, Inc., June 1992

TABLE 9-1
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS

Habitat Requirements for Avian Species

Species	Habitat Requirements
Red-tailed hawk (<u>Buteo jamaicensis</u>)	Similar habitats required for both breeding and wintering. Deciduous and mixed woodlands interspersed with meadows, and brushy pastures. Large trees needed for nesting and perching.
Turkey vulture (<u>Cathartes aura</u>)	Similar habitats required for both breeding and wintering. Various habitats include wet, dry, open, and wooded areas. Wooded habitat is usually dominated by deciduous or mixed trees. Clearings are preferred for easy sighting of carrion.
Killdeer (<u>Charadrius vociferus</u>)	Breeding habitat: Heavily grazed meadows, edges of pasture ponds, and dry uplands. Wintering habitat: Plowed or sparsely vegetated moist fields. Coastal flats and beaches, river and lake shores that are free of ice. Special habitat requirements: Open fields or waste areas with closely cropped or sparse vegetation.
Northern bobwhite (<u>Colinus virginianus</u>)	Breeding habitat: Open pastures, meadows with abundant weedy growth, open woodlands. Wintering habitat: Prefers areas with an edge of protective vegetative cover; pastures and brushy open woodlands. Special habitat requirements: Edges, well-drained sandy or loamy soils, adjacent woodlands. Dense cover closely located to feeding areas is essential in winter.
Prairie warbler (<u>Dendroica discolor</u>)	Breeding habitat: Open sandy or gravelly areas with pitch pines, scrub oaks, and other plants with similar requirements. Wintering habitat: Throughout the West Indies. Special habitat requirements: Favors coniferous cover.

TABLE 9-1
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
Habitat Requirements for Avian Species

Species	Habitat Requirements
Yellow warbler <u>(Dendroica petechia)</u>	Breeding habitat: Farmlands, orchards, roadsides along lakes and streams. Wintering habitat: Central and South America. Special habitat requirements: Scattered small trees or dense shrubbery.
Black-throated green warbler <u>(Dendroica virens)</u>	Breeding habitat: Usually hemlocks, but may also use other northern conifers. Rarely utilizes deciduous species. Wintering habitat: Southern North America and Central America. Special habitat requirements: Coniferous or mixed woodlands.
Barn swallow <u>(Hirundo rustica)</u>	Breeding habitat: Farmlands, rural and populated areas. Wintering habitat: South America. Special habitat requirements: Man-made structures for nesting.
Wood thrush <u>(Hylocichla mustelina)</u>	Breeding habitat: Mature lowland forests (mainly deciduous or mixed). Wintering habitat: Mexico and Central America. Special habitat requirements: Deciduous or mixed forests with all trees and abundant sapling growth. Cool moist conditions.
Carolina wren <u>(Thryothorus ludovicianus)</u>	Breeding habitat: A variety of places from lowland stream bank tangles to brushy upland slopes. Prefers moist areas. Wintering habitat: Low, flat ground near tidewater creeks, narrow valleys and deep ravines. Special habitat requirements: Low brushy vegetation.

TABLE 9-1
TOWN OF BROOKHAVEN LANDFILL EXPANSION AREA
FINAL EIS
Habitat Requirements for Avian Species

Species

Habitat Requirements

Brown thrasher
(Toxostoma rufum)

Breeding habitat: Bushes, low trees, tangle of vines in open pastures or woodland edges and clearings in early stages of second growth. Wintering habitat: Coastal areas where climate is mild with sparse snow cover. Special habitat requirements: Low, dense woody vegetation for nesting and cover.

Canada warbler
(Wilsonia canadensis)

Breeding habitat: Occupies a variety of habitats from lowlands to uplands, coniferous to deciduous. Favors shrubby undergrowth in cool, moist, mature woodlands, aspen and cherry "burns," streamside thickets, cedar bogs, weedy ravines, and, less often, dry forest edges with young trees. Wintering habitat: Central and South America.

found on Long Island whereas the species observed was more likely the Fowler's toad. Accordingly, this observation should be confirmed.

9.2.2 Response

Comment noted. The toad species that was mistakenly identified as an American toad should have been identified as a Fowler's toad. Since the Fowler's toad frequents sandy areas, whereas the American toad prefers moist areas, the toad observed at the Waste Management Facility Site was likely a Fowler's toad (Bufo Woodhousei var fowleri). Table 3-23 of this FEIS has been amended to reflect this correction.

9.2.3 Comment

The DEIS states that affected species are capable of relocating to adjacent undisturbed properties. However, this conclusion does not consider that most ecological studies on Long Island are based on the assumption that all habitat areas on Long Island are at carrying capacity for all ecological niches. Based on this factor, even if some individuals relocated to adjacent area, this would still result in a population decline due to the lack of sufficient niches to accommodate all displaced animals. Accordingly, it is recommended the FEIS discuss this factor.

9.2.3 Response

Presently, the Landfill Expansion Area is utilized as a soil borrow area and is mostly devoid of vegetation. The extent of the Landfill Expansion Area that will be further cleared is limited to about half of its total area (approximately 39 acres out of 78 acres). The removal of vegetation and the resultant habitat loss will affect only a small number of wildlife species and individuals.

The fact that most ecological niches on Long Island are filled is not disputed. However, many of the wildlife species noted in the Landfill Expansion Area are generalists. Generalists are capable of dealing with a wide range of environmental conditions. Further, individuals can occupy the same niche, provided they have only slight behavioral differences. For instance, two species of birds that feed on similar foodstuffs or even mate in similar habitats can co-exist if feeding and breeding times vary. The inclusion of a 560-foot buffer between the Landfill Expansion Area and the residences to the west will

leave much habitat undisturbed. This area of undisturbed vegetation is anticipated to be able to adequately absorb the few individuals displaced as a result of land clearing.

9.2.4 Comment

The DEIS states that the revegetated landfill cover will "provide nesting and foraging habitat for passerines, waterfowl and small mammals" and will be used by raptors for hunting. It is recommended that supporting references and documentation be provided in the FEIS to confirm these conclusions. In addition, if no man-made surface water bodies are proposed for the area, it is unclear how habitat will be provided for waterfowl on the site. In addition, the FEIS should indicate for what species the revegetation will be of benefit.

9.2.4 Response

The commentor is correct regarding the absence of man-made water bodies. The proposed stormwater recharge basins will not retain water for any significant length of time after a storm event, and will not provide habitat suitable for waterfowl. Previous observations by Wehran at other landfill sites have indicated that certain species utilize specific features of closed landfills.

Stickups

Risers for various wells are commonly used as hunting perches by kestrels and red-tailed hawks. Artificial perches may also be set up surrounding the landfill to provide other suitable perch sites.

Closed, Vegetated Landfill Areas

Depending on the density, height, and species composition of the final cover, the landfill may provide nesting cover for ground nesting passerines and small animals. New York State special concern species which may benefit from this type of habitat include vesper and savannah sparrows.

9.3 WETLANDS

9.3.1 Comment

It should be noted that the wetlands discussed in sections of the DEIS are also regulated by the Town of Brookhaven under Chapter 81 of the Town Code and that freshwater wetlands extend further north than is shown in the Freshwater Wetlands figure. Accordingly, it is recommended this be noted in the FEIS.

9.3.1 Response

Wetlands occurring within the Town are regulated under Chapter 81 of the Town Code. In the spring of 1991, wetlands which extend to a point just south of the Material Recovery Facility (further north than shown on Figure 3-23 in the DEIS) were field-delineated by the Town's Division of Environmental Protection and were surveyed by Louis McLean Associates. These wetlands will not be disturbed or impacted in connection with the construction and operation of the Landfill Expansion Area. This map is on file in the Division's office.

9.3.2 Comment

Confirm the locations of wetlands shown in Figure 3-23 of the DEIS.

9.3.2 Response

The wetland areas presented in Figure 3-23 of the DEIS are NYSDEC-designated wetlands. These wetland areas are larger than 12.4 acres. Their location was derived from a preliminary map prepared by the NYSDEC on May 8, 1992. In general, the NYSDEC does not show wetlands on 1:24,000-scale maps less than 12.4 acres in size.

9.3.3 Comment

The location of the wetlands plotted by McLean during Spring 1992 should be noted.

9.3.3 Response

The maps of the wetlands delineated by the Town's Environmental Protection Division personnel, and surveyed by McLean Associates, are on file at the Town Division of

Environmental Protection's office. It should be noted, however, that these wetlands are not located on, or near, the proposed Landfill Expansion Area.

9.4 SIGNIFICANT HABITATS/RARE, ENDANGERED, THREATENED AND SPECIAL CONCERN SPECIES

9.4.1 Comment

In the discussion of "Endangered, Threatened, and Special Concern Species" the DEIS references of list of rare plants found in the Town of Brookhaven which were included in the Town Natural Resource Inventory. The DEIS states that "no regulatory status (i.e., State protection) is affiliated with the Town designation." This is a misinterpretation of the information provided in the Natural Resources Inventory. This list is not of species designated by the Town as rare, but is a list of New York State-designated endangered, threatened or rare plants which happen to occur in the Town of Brookhaven. Therefore, in contrast to the comment in the DEIS, these species do have State protection under 6 NYCRR Part 193.3. The DEIS also states that "Many of these species, while being considered rare on Long Island, have secure populations throughout other areas of their range." This is incorrect - because these species have been given State designation as either endangered, threatened or rare, it means they are endangered, threatened or rare throughout New York State, not just on Long Island. Accordingly, these statements should be corrected in the FEIS.

9.4.1 Response

The comment is noted. Plant species listed in the Town's Natural Resource Inventory as rare are also listed by New York State as rare and are protected throughout the State under 6 NYCRR 193.3.

Because it exhibits unique climatological and soil characteristics, Long Island contains a large percentage of New York State rare plant species. This phenomena occurs because some specific habitats found on Long Island can be found nowhere else in New York. Subsequently, some species are found in these rare habitats on Long Island and are extremely vulnerable to development. Others are located on the extremes of their biological ranges and may occur as secure populations in other states.

9.4.2 Comment

The DEIS states that no endangered, threatened, and rare species have been noted on the site. However, the DEIS has noted that rare and/or endangered plant species have been found on the site. Accordingly, this statement should be corrected.

9.4.2 Response

During the field survey, two tentatively identified rare plants (Stueve's bush clover and Nuttall's Lobelia) were identified in areas of the Waste Management Facility Site not scheduled for site development. Implementation of the proposed Landfill Expansion will not impact these species.

9.4.3 Comment

In the eventual revegetation of the site, it is recommended that an emphasis be placed on using native plant material and in gearing the revegetation to the re-creation of wildlife habitat which is most favorable to those wildlife species found in the area which are rare, forest-interior dependent, least tolerant of disturbance and area-sensitive. Emphasis should not be geared toward suburbanized, common species.

9.4.3 Response

The proposed plantings have been selected in response to a number of important criteria to ensure both short-term and long-term development of wildlife habitat. These criteria include soil stabilization and erosion control; development of nutrients and organic matter in the soil; creation of vegetative litter; provision of food, cover, and nesting sites for wildlife; revegetation that is compatible with the surrounding plant community; and providing conditions to encourage the growth of desirable species for continued habitat development.

As documented by the field investigation, the vegetation surrounding the proposed Landfill Expansion Area has been identified as oak-pine and pine-dominated forest communities. Pitch pine is the dominant species, and it exists in a generally semi-mature to mature age class immediately to the north, south, and west of the Landfill Expansion Area. Since the existing plant community is a strong indicator of the species which will

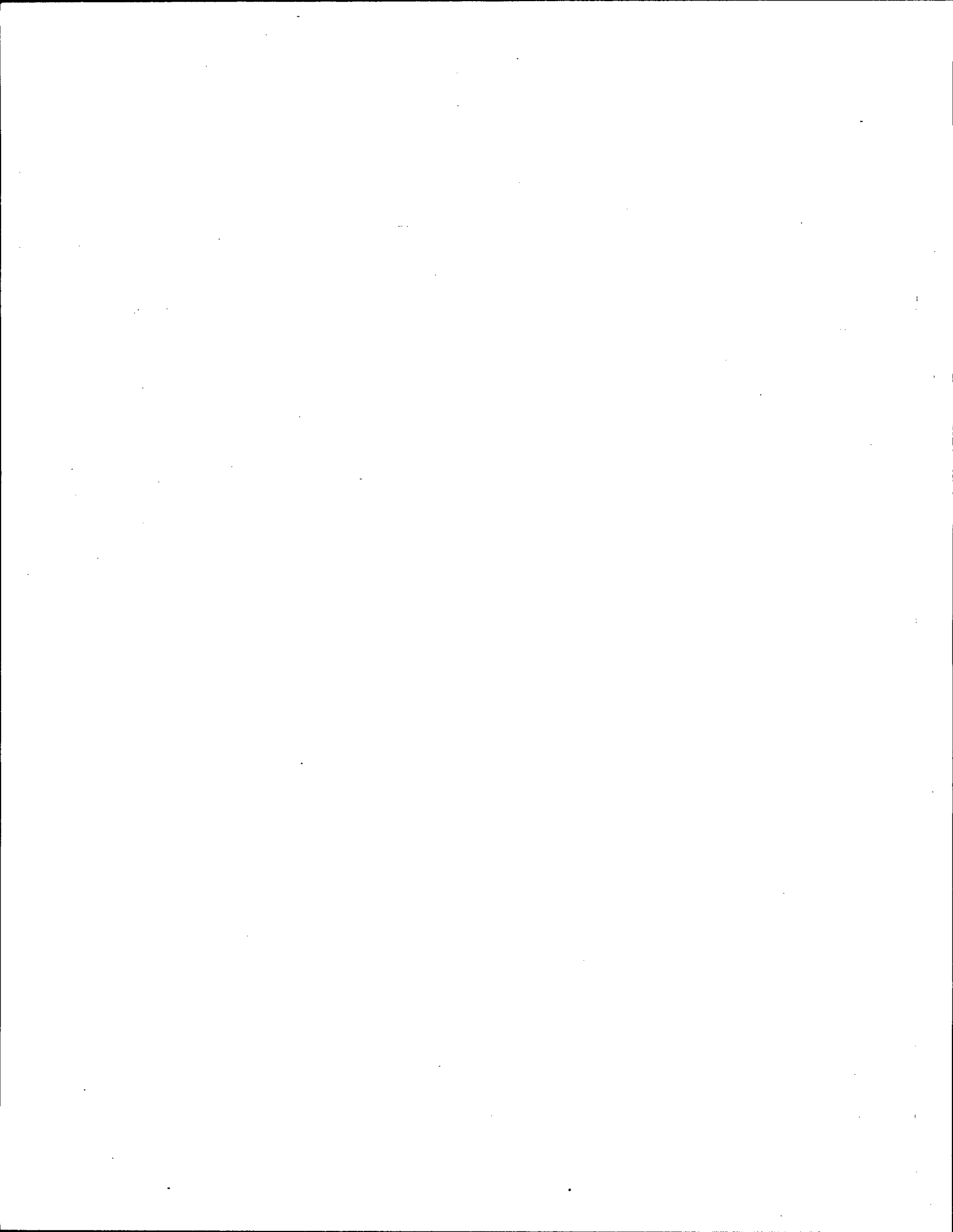
tolerate the often droughty, infertile soil conditions, plant material that is compatible with this vegetation association has been selected. In addition, in order to enhance the wildlife habitat quality of the landfill environs, creating a layered canopy and cover of ground layer, shrub layer, and understory canopy has been proposed. Appropriate selection of woody and herbaceous plants suited to conservation uses will provide shelter, as well as food, for a variety of wildlife (e.g., selected grasses and fruit-bearing shrubs will encourage birdlife). A detailed revegetation plan is described in Section 8 of the Engineering Design Report (which is incorporated by reference), and is summarized below.

The planting of specially selected trees, shrubs, wildflowers, and grasses will not only stabilize the soils to minimize erosion, but will also greatly improve the Landfill Expansion Area as a wildlife habitat and refuge area by offering birds and small mammals food and protection. A mass planting of berry-bearing and other shrubs and small trees will be planted adjacent to the diversion channels forming a root mat to inhibit erosion while providing a seasonal food source and shelter. Wildflowers and grasses planted in continuous bands will attract bees, butterflies, and insects for cross-pollination as well as provide food and cover for upland birds and small mammals. Legumes, like clover, enrich the low fertility soil by "fixing" atmospheric nitrogen in their root nodules and also supply winter forage for wildlife. In addition, larger deciduous trees and evergreen screen plantings will be located along the Landfill Expansion Area's perimeter road. In time, these trees will provide nesting and perch areas for larger birds.

The final use plan for the Landfill Expansion Area contribute to the development of an appropriate wildlife habitat and protection area especially for resident or transitory bird populations and small mammals. The mammal populations are less conspicuous than the birds, but are integral to maintaining the natural character of the area. The eastern cottontail rabbit, eastern chipmunk and the red fox, if provided for, will encourage other wildlife populations. It is also possible, that by increasing rodent populations, a greater number of hawks (for example, the red-tailed hawk) will occur.

In summary, the final use plan for the Landfill Expansion Area will, upon implementation, provide for the development of an improved terrestrial habitat that will be able to attract and support a greater diversity of wildlife species.

10.0 ADDITIONAL PROJECT-RELATED ISSUES



10.0 ADDITIONAL PROJECT-RELATED ISSUES

10.1 SOLID WASTE MANAGEMENT PLANS

10.1.1 Comment

The Solid Waste Management Plan for the Town of Brookhaven does not incorporate all of the elements necessary to comply with the State's mandate.

"The Town of Brookhaven must have a solid waste management plan (Plan) approved before a permit can be issued for Cell 5. Since the Plan has not yet been approved, testimony on the Plan is relevant in this hearing. We agree that the Town has stated accurately the State's intent on how to manage solid waste but we believe that the Plan does not incorporate all of the elements necessary to comply with the State's mandate."

10.1.1 Response

Comprehensive solid waste management planning efforts have been ongoing in the Town of Brookhaven since 1986, and have evolved within the framework of the State Environmental Quality Review Act (SEQRA). In its continuing capacity as SEQRA Lead Agency for solid waste management planning, the Town has utilized a Generic Environmental Impact Statement and appropriate supplements in conjunction with the development and updating of the Solid Waste Management Plan (SWMP). The GEIS documents issued by the Town reflect the commitment to follow the State hierarchy of reduction, reuse, and recycling first. As projected in the Plan, approximately 63 percent of the solid waste stream will be eliminated through waste reduction and recycling measures by 1995. This represents a more ambitious reduction/recycling goal than is expressed in the State Plan.

As discussed in Section 2.1.3 of the DEIS, the SWMP provides, in general, for the reduction, recycling, processing, and disposal of all the municipal solid waste generated in the Town according to the goals established by New York State and the Town. As such, the elements of the Town's comprehensive SWMP include waste reduction at the point of generation; materials recycling through mandatory source separation and the use of the Town's Materials Recycling Facility (MRF); household toxics control (STOP program); yard

waste composting; MSW composting; construction and demolition debris processing and recycling; land clearing debris processing and recycling; major household appliance handling; tire handling; and a solid waste transfer station. All of these components are in various stages of implementation and are described in detail in the Town's SWMP, the Generic Environmental Impact Statement component documents, and the Town's Comprehensive Recycling Analysis.

It should be noted that the NYSDEC has advised the Town that its SWMP is substantively approvable, and that the Town has responded satisfactorily to all substantive NYSDEC Comments on the SWMP. The only issue that remains to be addressed by the Town prior to receiving NYSDEC approval of its SWMP is to compile the SWMP into the 'stand-alone document' format preferred by NYSDEC. Although this format is not authorized by any currently applicable law, rule or regulation, the NYSDEC is requiring it as a matter of preference, and has revised 6 NYCRR Part 360 to require it in the future. The Town is currently working to provide the NYSDEC with the format that it desires.

It is also noted that the NYSDEC may deem the Town's Solid Waste Facility Permit application incomplete until such time as final NYSDEC approval of the Town SWMP is secured.

10.1.2 Comment

The Solid Waste Management Plan is insufficient and is in need of revision.

10.1.2 Response

The Town's Solid Waste Management Plan (SWMP) is consistent with the New York State Solid Waste Management Plan (NYSSWMP) of 1988, and its subsequent updates. The SWMP, originally issued in March 1989, specified that the Town would undertake a number of actions calling for waste reduction, recycling, and development of solid waste management facilities. The SWMP was accompanied by a Generic Environmental Impact Statement (GEIS), identifying not only the potential adverse impacts that could result if the Plan was implemented, but its benefits as well.

The SWMP has undergone a series of revisions and updates since its issuance in 1989. Each subsequent version of the document has provided an update of the Town's solid

waste management status, including changes in solid waste management technology, and has followed the guidance of the NYSSWMP, as presented in its annual updates.

10.1.3 Comment

"The Town doesn't need the ash to continue using the landfill for what's left over after recycling. There's no law or regulation from the state or federal government that says that has to be the case, so from our perspective the trash for ash deal makes no sense."

10.1.3 Response

The pros and cons of entering into the IMA were explored in detail in the 1991 SWMP Update. The commentor is referred to that Update for a detailed response. It should be noted that, under its Consent Order with the NYSDEC, the Town was required to enter into an IMA with Hempstead, generally requiring the Town to deliver processible waste to the Hempstead ERF and to accept ERF Ash for disposal. The IMA includes provisions allowing the Town to cease accepting ERF Ash from Hempstead on January 31, 2000. The Town intends to make a full evaluation of the IMA, and its entire waste management system in 1997 and 1998, in order to determine whether to exercise that option.

10.2 EXISTING LANDFILL STATUS

The existing sanitary landfill is classified by the NYSDEC as an inactive hazardous waste site.

10.2 RESPONSE

The existing Brookhaven Landfill, which had been classified as an inactive hazardous waste site, was delisted by the NYSDEC in 1992.

10.3 DRAFT ENVIRONMENTAL IMPACT STATEMENT

10.3.1 Comment

The huge and the highly technical three volumes which comprise the DEIS makes it difficult for the average person to make any informed comment.

10.3.1 Response

The DEIS has been prepared pursuant to Article 8 of the Environmental Conservation Law (ECL), and Title 6, Part 617 of the official compilation of Codes, Rules and Regulations of the State of New York (NYCRR) which sets forth the rules promulgated by the NYSDEC under SEQRA. These regulations state that an EIS should be analytical and not encyclopedic, but should assemble relevant facts upon which the lead agency's decision is to be made, identify the essential issues to be decided, and evaluate all reasonable alternatives. In fulfilling the requirements of the regulations with respect to the content of the DEIS, the Town had to balance the competing objectives of being fully responsive and relevant with the need to be concise.

The DEIS contains information which addresses the topics outlined in the Preliminary Scope Outline distributed and the comments received at both public hearings and during the comment period. The size and somewhat technical nature of the DEIS results from the incorporation of information drawn from the engineering and hydrogeological aspects of the project, along with specialty study data such as noise and traffic discussions. A certain amount of technical information is unavoidable and necessary to correctly explain the various aspects of the project and satisfy the requirements of the NYSDEC regulations. Sections 1 and 2 of the DEIS provide a Summary and Description of the Proposed Action, respectively, which present a discussion of the major project components, referencing the reader to more detailed information further along in the document.

10.3.2 Comment

The DEIS states in broad generalities how leachate generation, drainage problems, soil erosion, groundwater pollution, air pollution, noise, gas generation and odors would be controlled or mitigated. Thus, it would seem there should be no problem with Cell 5, but it is hard to envision that the Town could effectively implement and enforce all the procedural safeguards proposed to solve the environmental problems of Cell 5.

10.3.2 Response

In addition to the DEIS that has been prepared for this project, a Part 360 Solid Waste Management Facility Permit Application (6 NYCRR Part 360-2.3) has been prepared in order to obtain the required permit for the proposed Landfill Expansion. The Part 360 application requirements of the NYSDEC necessitated the preparation of a detailed hydrogeologic investigation report and detailed engineering design reports and plans. All of the documents which are part of the Part 360 application are incorporated by reference in this FEIS. These documents provide additional detail on the design and operational features discussed in the DEIS and this FEIS.

The proposed design will provide environmental safeguards that are in accordance with the NYSDEC Part 360 regulations for permitting solid waste and ash/residue landfills. The Landfill Expansion Area is being designed utilizing state-of-the-art technology that will include the following specific elements which were described in detail in Section 2 of the DEIS:

- Groundwater protection, including the utilization of a double-composite baseliner
- Primary and secondary leachate collection system
- Sequential landfill development
- Quality Assurance and Quality Control Plan (QA/QC Plan) for landfill construction
- ERF Ash and other Waste Stream component screening and management
- Cover material management
- Erosion and sedimentation control
- Surface and groundwater monitoring
- Closure and post-closure plans
- Contingency planning
- Detailed operation and management reporting

As part of the 6 NYCRR Part 360 application, the results of an extensive investigation into the hydrogeology of the Landfill Expansion Area are presented and analyzed in a Site Hydrogeological Report; and the design, construction and operational

details of the Landfill Expansion Area are presented in an Engineering Design Report containing, in addition to the Engineering Design, the following components:

- Operation and Maintenance Plan
- Contingency Plan
- Quality Assurance and Quality Control Plan
- Technical Specifications
- Engineering Calculations
- Closure Plan

10.3.3 Comment

The name of the community is Horizon Village, not South Sungate, as incorrectly stated in the DEIS.

"We are the community along the western boundary of the landfill site. The name of our community is Horizon Village, not South Sungate, as it is incorrectly stated in the DEIS."

10.3.3 Response

Comment noted.

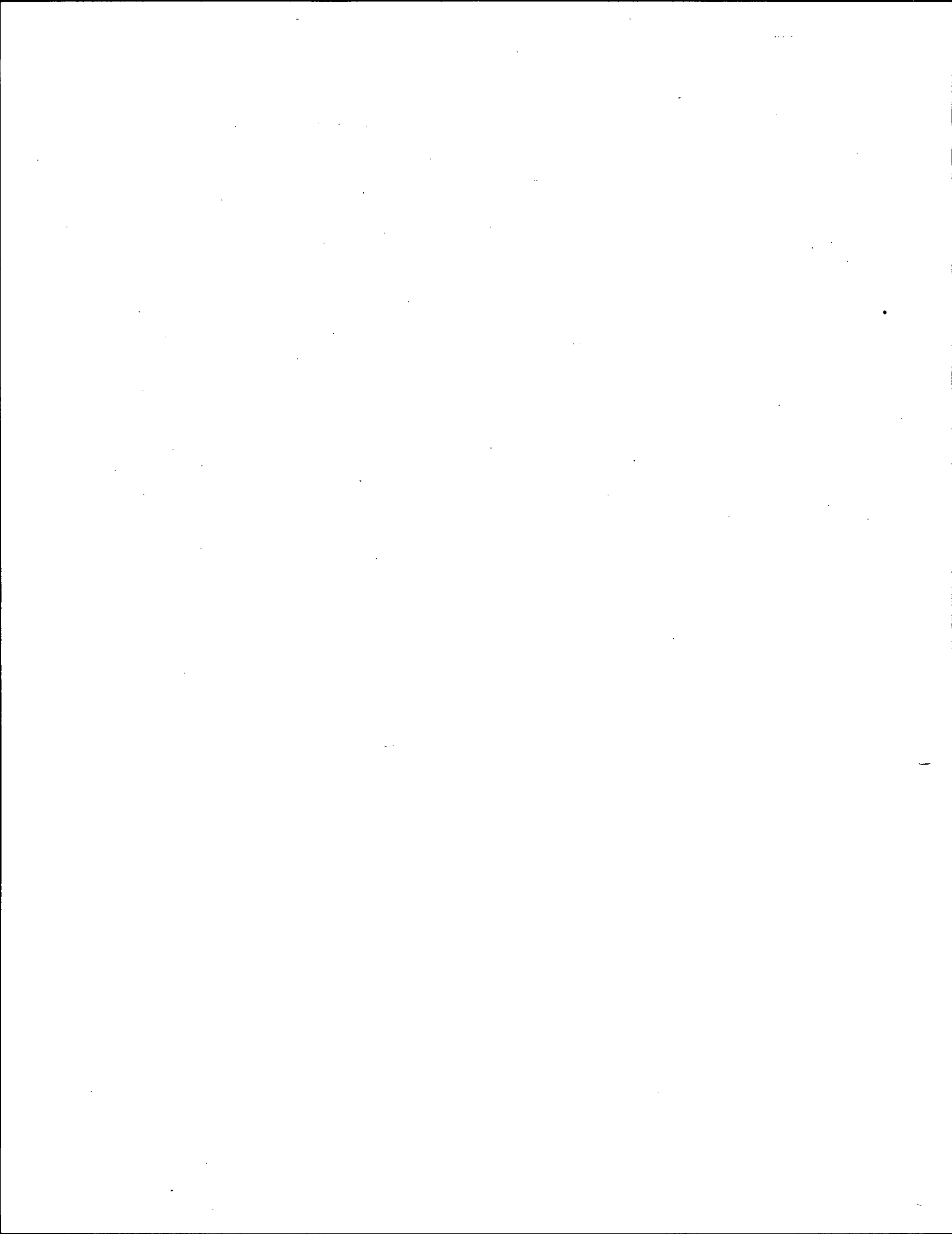
10.3.4 Comment

Provide figures for Existing Landfill Area, paved area, building area, natural area/lawn landscaped area, and balance and provide figures for proposed paved area, proposed natural area, proposed lawn/landscaped area, and balance.

10.3.4 Response

Figure 2-3 in the DEIS presents, on small format, the proposed Landfill Expansion Area and its appurtenant features, in relation to the Existing Landfill and its appurtenant features. A large format sheet has been included in the Engineering Report as part of the Part 360 Solid Waste Management Permit Application, for easier recognition of features. In addition, a landscape plan, prepared by a licensed landscape architect, is also contained

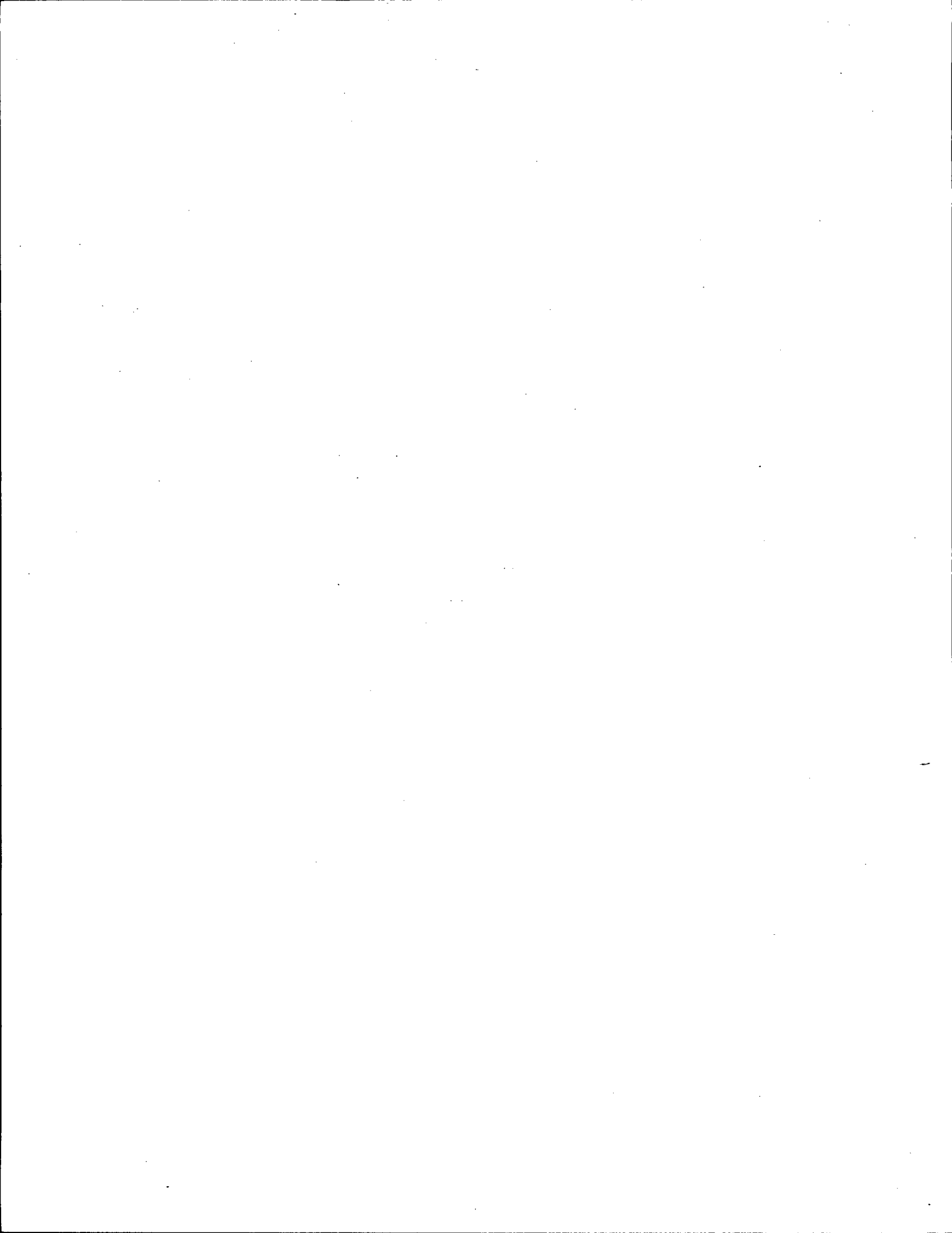
in the Engineering Report. The Engineering Report is incorporated into this FEIS by reference.



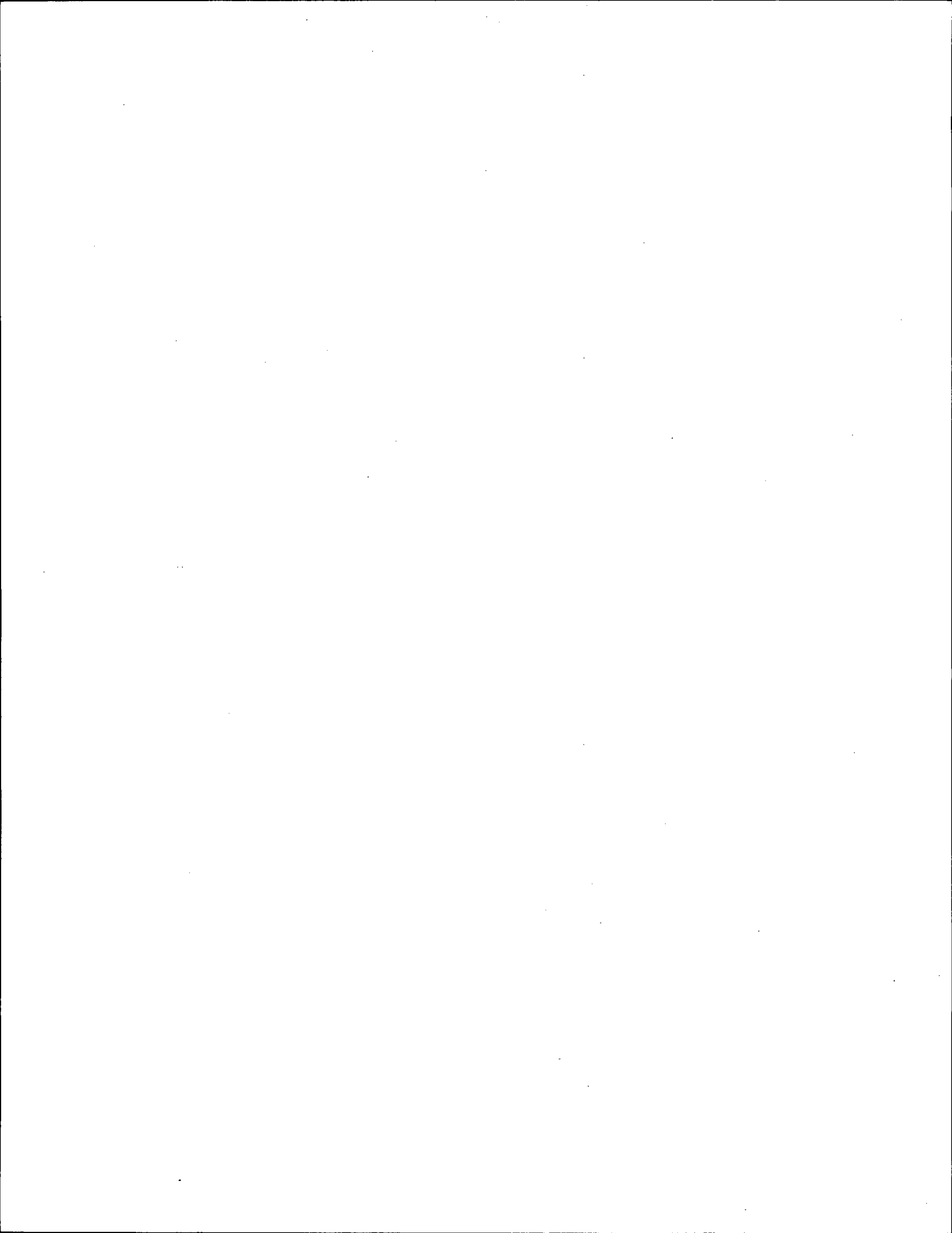
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**APPENDIX 1
PUBLIC HEARING TRANSCRIPT**



1
2 STATE OF NEW YORK: COUNTY OF SUFFOLK

3 TOWN OF BROOKHAVEN
4 -----X

5 DEIS PUBLIC HEARING ON BROOKHAVEN LANDFILL EXPANSION
6 -----X
7
8
9

10 3233 Route 112
11 Medford, N.Y. 11763

12 November 10, 1992
13 2:00 p.m.
14
15

16 B E F O R E: JAMES H. HEIL,
17 Commissioner, Department of Waste Management
18
19
20
21
22

23
24 ADEPT COURT REPORTING SERVICE
COURT REPORTERS & NOTARIES
25 71 Comerford Street, Port Jefferson Sta., N.Y. 11776
TEL: (516) 689-0111 (212) 926-7804

1
2 A P P E A R A N C E S :3 MICHAEL GROBEN, Assistant Town Attorney
4

5 COMMISSIONER HEIL: Good afternoon.

6 The Town of Brookhaven, to further implement
7 its solid waste management plan, proposes to
8 develop a seventy-eight acre landfill
9 expansion, which will be composed of
10 fifty-six acres of landfill footprint and
11 twenty-two acres of ancillary facilities
12 located within the property boundaries of the
13 Town of Brookhaven Waste Management Facility
14 Site.15 The proposed landfill expansion area,
16 identified as Cell Number 5, would be
17 developed on the western portion of the five
18 hundred and thirty-four acre waste management
19 facility site located on the south side of
20 Horse Block Road at Woodside Avenue in the
21 Hamlet of Brookhaven.22 The expansion area will be used to
23 dispose of unprocessable waste from the
24 town's waste management system, Brookhaven
25 downtime wastes from the solid waste

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processing facilities utilized by the town, ash from the Hempstead Energy Recovery Facility, process residues from the town's material recycling facility and from solid and yard waste composting, construction demolition debris process residue, car shredder residue and clean fill.

The expansion area will be lined with a double composite liner system in accordance with state regulations and would be constructed in nine phases to match waste flows.

The expansion area is projected to be used for eighteen years based on current design waste flows.

On November 20th, 1991 the Town of Brookhaven prepared a full Environmental Assessment Form, announcing to potentially involved agencies and interested parties that a Type I project was being proposed and seeking concurrence of involved agencies in having the town serve as lead agency.

On January 21st, 1992, the Town of Brookhaven formally declared itself lead

1
2 agency under the State Environmental Quality
3 Review Act, adopted a positive declaration
4 for the project and issued a notice of
5 positive declaration and notice of intent to
6 prepare a Draft Environmental Impact
7 Statement.

8 The notice set forth the town's
9 determination that the proposed project could
10 have potentially significant impacts on the
11 environment and that a D.E.I.S. would be
12 prepared.

13 Subsequently, the notice was
14 distributed to all involved agencies and
15 published in the Environmental Notice
16 Bulletin. A public scoping meeting was held
17 on February 18th, 1992.

18 The purpose of this afternoon's
19 public hearing is to receive comments on the
20 Draft Environmental Impact Statement.

21 I am James Heil, the Commissioner of
22 the Department of Waste Management. The town
23 board has asked me to chair this hearing on
24 its behalf.

25 A written record of the hearing is

1
2 being taken by a stenographer and will be
3 transmitted to the town board.

4 I will acknowledge at this time the
5 presence of Michael Groben to my left,
6 Assistant Town Attorney, and representatives
7 of the consulting firms of Wehran-New York
8 and Dvirka and Bartilucci, and the legal firm
9 of Nixon, Hargrave, Devans and Doyle.

10 We request that those wanting to make
11 a public statement complete a card at the
12 rear of the room.

13 Persons who do not fill out a card
14 will not be called to speak. Elected
15 officials and representatives of agencies
16 will be called first, followed by those
17 completing cards in the order of their
18 receipt.

19 The hearing will remain open this
20 afternoon until all who submit cards have
21 spoken.

22 We request, for the convenience of
23 the attendees, that comments be limited to
24 approximately five minutes.

25 Persons who desire to speak for

1
2 longer than five minutes can request
3 additional time after all others who desire
4 to comment have spoken.

5 Depending on the hour we will try to
6 be reasonable in accomodating such requests.
7 If you have a written version of your
8 statement, please submit it to the
9 stenographer.

10 The purpose of this hearing, once
11 again, is to receive comments on the Draft
12 Environmental Impact Statement, not for the
13 town to respond to questions regarding the
14 project.

15 All substantive comments and
16 questions will be responded to in the final
17 Environmental Impact Statement that will be
18 issued following the close of the comment
19 period.

20 In addition, written comments on the
21 D.E.I.S. will be accepted until December 4th,
22 1992.

23 Comments should be addressed to James
24 Heil, Commissioner, Town of Brookhaven
25 Department of Waste Management, Building --

1
2 3233 Route 112, Medford, New York 11763.

3 Persons who speak at this hearing may
4 but need not repeat their comments in
5 writing. Oral and written comments will be
6 accorded equal weight.

7 The town contemplates preparing a New
8 York State Department of Environmental
9 Conservation Part 360 application for the
10 project.

11 The application will contain specific
12 design information and a detailed
13 hydrogeologic report.

14 The permit application may be the
15 subject of a public hearing conducted by the
16 State Department of Environmental
17 Conservation.

18 The town thanks you for your
19 interest, and if there are no questions on
20 the hearing procedure format, I will call the
21 first speaker.

22 Are there any questions on the
23 hearing format? Okay. The first speaker is
24 Elizabeth Gundlach.

25 MS. GUNDLACH: Yes. I'm just a

1
2 concerned citizen and parent, and I would
3 like to just ask you not to go ahead with
4 this expansion, because I believe that the
5 town has not done enough as far as recycling
6 and reducing and encouraging that. That's
7 really all I have to say.

8 COMMISSIONER HEIL: Thank you very
9 much. Amy Brock? Please excuse the last
10 name. If you could, please perhaps clarify
11 that.

12 MS. BROCK: Commissioner Heil, my
13 name is Amy Brock. I'm a resident of East
14 Patchogue.

15 I am a parent of children in the
16 Hampton Avenue School. And I am the
17 President of the Hampton Avenue P.T.A..

18 I am here today on behalf of the
19 students and faculty and members of the
20 community to remind that you we were here
21 last year concerning issues of the landfill.

22 We spoke about the problems of the
23 odor from the landfill and our concerns about
24 the health issues related to the landfill.

25 We got a response from the town. We

1
2 got a positive response. We believed that
3 you were concerned and make an honest and
4 sincere effort to alleviate the problem, and
5 certainly we got results.

6 The problem has not disappeared, but
7 the problem has been treated and has
8 improved.

9 Now we find that we are faced with
10 this expansion of the landfill, a tremendous
11 expansion of the landfill.

12 We feel that this is unnecessary and
13 it's detrimental to our community. We feel
14 that efforts to recycle have not been fully
15 pursued, and we would like to see the town
16 hold up on approval of the landfill expansion
17 and further explore recycling.

18 We would like to have more
19 information on the effects of air quality,
20 the effect of the landfill and the ash on the
21 air quality in the area.

22 We do not think that the cost of the
23 landfill expansion has been fully addressed.
24 Are issues such as future capping of the
25 landfill and methane collection systems

1
2 included in the proposed cost of this
3 landfill expansion?

4 Are possible future compensation to
5 the community for the effect of the landfill
6 being addressed?

7 It is possible that sometime in the
8 future the Hampton Avenue School will be
9 severely affected by the odors from the
10 landfill and the Cell 5 expansion.

11 We would like to see these issues
12 addressed and explored fully before the
13 D.E.I.S. is approved and before this landfill
14 expansion is pursued.

15 We are very concerned about the
16 health of our children, and we feel that the
17 town and the town board must address these
18 issues before going ahead with the landfill
19 expansion. Thank you very much.

20 COMMISSIONER HEIL: Thank you very
21 much, Ms. Brock. Rhonda Weiss? Good
22 afternoon. MS.

23 WEISS: Good afternoon, Commissioner. I
24 spoke with you a few weeks ago on the phone.
25 I don't know if you recall our conversation.

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2
3 Our
4 concern at that time was about the odor that
5 was in the Hampton Avenue School.

6 The smell
7 was inside the school as compared to the odor
8 outside, which was -- which is our concern as
9 parents and as residents of the area and
10 people who are in the South Country School
11 District.

12 That is, our children are in that school for
13 two years with these gases and whatever is in
14 the air contained within the building.

15 I am in
16 complete agreement with what Mrs. Brock has
17 said, and I would like to add that in
18 addition to that we have taken steps as
19 parents, as cub scout people, as brownies and
20 girl scouts people, as taxpayers in South
21 Country School District and residents in
22 Brookhaven Hamlet to contact different
23 political offices and to contact WALK. I was
24 on the phone today with David Weiss.

25 We have many suggestions, many ideas
as to what we would like to go over with you

1
2 and other town officials on Long Island, not
3 just Brookhaven.

4 We feel this is an island-wide
5 problem. We would like to suggest to you
6 today that we use Brookhaven as a shining
7 example for the rest of Long Island.

8 We're not pointing fingers at anyone.
9 This is our problem, everyone on Long Island.
10 Everybody produces garbage.

11 We would like to use the opportunity
12 with the children to start reinforcing the
13 idea of everyone producing less garbage on
14 Long Island.

15 Because of the shortage of time, we
16 can't get into all of our ideas, but I would
17 like to propose this to you.

18 Prior to all of you agreeing that
19 this is the alternative, to open this up, so
20 we would like some time to meet with you and
21 to go over our ideas which have not been
22 discussed as of yet before you reach this,
23 and we would like to let you know that it's
24 something that we would like to get T.V.
25 stations involved from Manhattan to Montauk

1
2 and the radio stations.

3 There's a book out that's called
4 Fifty Simple Things You Can Do To Save The
5 Planet Earth.

6 If you would, I would like to use
7 that idea that -- all the ideas in that book
8 in conjunction with public awareness through
9 the T.V. as a media and newspapers and the
10 children; competitions, on and on.

11 We can go on to let people on Long
12 Island become aware of simple things that
13 they can do so that we don't have to use
14 seventy-eight acres of land for landfill, so
15 that we can produce less garbage, while at
16 the same time, Mr. Heil, these ideas will
17 help to create new jobs for people on Long
18 Island.

19 So we're confident if we all work
20 together in a peaceful manner we can produce
21 more jobs on Long Island. We can get people
22 producing less garbage and all be better off
23 for it.

24 COMMISSIONER HEIL: Thank you. I'll
25 be more than happy to come and meet with you

1
2 at any time during the day or evening. Just
3 call my office when your group is ready.

4 MS. WEISS: Thank you for
5 your time. COMMISSIONER

6 HEIL: Marilyn McKeown? Good afternoon.

7 MS.

8 MCKEOWN: Hi, Jim. I'm here this afternoon
9 for the (League of Women Voters of Brookhaven.)

10 The
11 League of Women Voters, and it's possible you
12 know, doesn't take a position on any subject
13 before a thorough study of it.

14 Now, the County League has studied and taken
15 a position on the municipal solid waste
16 issue.

17 The main thrust of that position is the
18 familiar three R's, reduction, recycling,
19 reuse, and, in addition, we state that the
20 preservation of groundwater quality in any
21 M.S.W. plant is of the greatest importance.

22 So under that context I would like to
23 submit for the league the following comments
24 on the D.E.I.S. for this afternoon.

25 In the first place we compliment the

1
2 town for acknowledging the many problems
3 associated with such a large project and
4 citing the efforts that they'll make to
5 mitigate these problems.

6 But -- however, the league remains
7 unconvinced that this elaborate liner system
8 with a network of pipes for leachate
9 collection and so forth will necessarily
10 protect the groundwater.

11 Nowhere do we find a clear statement
12 of the procedures to be used if the testing
13 of leachate starts to indicate the
14 possibility of water pollution.

15 Instead, the thought is expressed
16 that since water downgradient of the
17 expansion is already downgraded, that further
18 pollution is of no consequence.

19 This is directly opposed to our
20 concept of making efforts for -- to protect
21 water quality, and since the effect of any
22 pollution will continue for years, and since
23 there is, you know, a stream, Beaver Dam
24 Creek, Carman's River, the Great South Bay,
25 all in the path of groundwater flow, we feel

1
2 that any pollution is bound to reach these
3 waters in time, and so we feel that there
4 should be more serious consideration given to
5 this problem in the D.E.I.S..

6 Our second point is that we are
7 firmly committed to the reduction, recycle
8 and reuse concept in handling municipal solid
9 waste and feel these ideas should be more
10 seriously explored in this document.

11 Nowhere in the document is the town's
12 excellent proposed don't bag it program
13 mentioned.

14 There are several pages devoted to
15 the concept of a thirteen-year landfill
16 instead of an eighteen-year one, but the
17 former is dismissed as being more costly per
18 ton, and it is not clear to us that the total
19 cost would be less.

20 So it's hard to see that a smaller
21 scaled down project will cost more than a
22 larger, more ambitious one.

23 It seems to us that -- as though any
24 new ideas in recycling, any advances in
25 package reduction, which the league has been

1
2 active in supporting, they haven't really
3 been seriously considered.

4 These new waste reduction procedures
5 could have significant impact, as I'm sure
6 you know, on the trash for ash deal with
7 Hempstead and thus on the scope of our
8 landfill needs.

9 A shorter, smaller project, we feel,
10 should be given more in depth consideration
11 than is apparent in the D.E.I.S..

12 Our position on any issue includes,
13 if it's relevant, the cost, of course. Now,
14 the stated cost per ton for landfilling the
15 expansion area is given at twenty-four
16 dollars a ton, which seems an unrealistic
17 figure to us if all of the extensive
18 monitoring that's presented in the document
19 are carried out as stated, and also since we
20 believe that the current tipping fees of
21 existing landfills are sixty dollars a ton,
22 and handling waste at the MRF is estimated at
23 forty-nine dollars per ton, which may not be
24 current, we feel the twenty-four dollars per
25 ton is a very low figure, and we feel that a

1
2
3 more realistic cost, a more detailed cost
4 analysis should be presented in the D.E.I.S.
5 before you accept it.

6 And then I would like to make one
7 final comment, which is, as stated, as I said
8 at the beginning, the League of Women Voters
9 operates by studying issues and reaching a
10 position on them through consensus, and we
11 felt that the huge and the highly technical
12 three volumes which comprise the D.E.I.S.
13 makes it difficult for the average person to
14 make any informed comment, and we sort of
15 felt since we are interested in public input
16 in this system of public input in such an
17 important project, it seems to have some
18 flaws when you really have to assimilate
19 such a mass of data to make effective
20 comments.

21 COMMISSIONER HEIL: Thank you very
22 much. I'm willing to meet with the league to
23 get them more briefing on the specific
24 issues, if that would be of any assistance.

25 MS. HCKEOWN: You have done that
before, and we would appreciate that.

1
2 COMMISSIONER HEIL: Faith McCutcheon,
3 please? Good afternoon.

4 MS. MCCUTCHEON: Good afternoon,
5 Commissioner Heil. I live in the Hamlet of
6 Brookhaven, and I really appreciate all your
7 efforts on recycling, but I am opposed to
8 Cell 5 until we have a reduction of waste by
9 having commercial garbage recycled. Thank
10 you very much.

11 COMMISSIONER HEIL: Thank you. At
12 this time I would like to acknowledge the
13 presence in the audience of Councilman Joseph
14 Macchia.

15 The next speaker is Virginia Weston.
16 Good afternoon.

17 MS. WESTON: Good afternoon. I'm
18 also from the Hamlet of Brookhaven. I live
19 in the Hamlet of Brookhaven, so you know how
20 I feel.

21 COMMISSIONER HEIL: Yes.

22 MS. WESTON: And I can just echo what
23 these other people have said about more
24 recycling, so perhaps it won't be so
25 necessary for such a large expansion.

1
2 And eighteen years is a long, long
3 time, and who's to know what sort of progress
4 will be made in your area of waste?

5 The one thing I had sort of wondered
6 about was what about these unfortunate people
7 who bought homes not too far from the
8 landfill?

9 Has -- has anybody thought of
10 compensating them in such a way? They did
11 this in all innocence, and we were told at
12 the time that this was not going to be a
13 regional landfill and it is.

14 And also perhaps some sort of
15 compensation for the area that this small
16 area of Brookhaven, of central -- not central
17 school district, but South Country School
18 District. Should there be some sort of
19 compensation for them?

20 COMMISSIONER HEIL: Okay. Thank you
21 very much for your comments. Steven
22 Romalewski from NYPIRG, (New York Public
23 Interest Research Group) Good afternoon.

24 MR. ROMALEWSKI: Good afternoon. For
25 the record, my name Steve Romalewski. I'm

1
2 the Long Island coordinator for the New York
3 Public Interest Group, NYPIRG, and we, of
4 course, appreciate the opportunity to comment
5 on the D.E.I.S..

6 We had a long history with local
7 civic and environmental groups in the town
8 addressing the town solid waste problems, and
9 we reiterate that we support the town's
10 rejection of incineration in Brookhaven and
11 to embark on the recycling alternative, but
12 nevertheless we remain strongly opposed to
13 the trash for ash deal between Brookhaven and
14 Hempstead.

15 The deal shows that incineration
16 still is a large component of the town's
17 solid waste plan.

18 The landfill has now become a
19 regional ashfill, taking in several thousand
20 tons of ash from the Hempstead incinerator
21 that accepts garbage from municipalities,
22 private carters throughout the region.

23 As more ash is dumped in the
24 landfill, the toxic hazards associated with
25 ash will simply intensify as more and more of

1
2 this material is brought in, and, incredible
3 enough, the town doesn't need the ash to
4 continue using the landfill for what's left
5 over after recycling.

6 There's no law or regulation from the
7 state or federal government that says that
8 has to be the case, so from our perspective
9 the trash for ash deal makes no sense.

10 You shouldn't continue and certainly
11 shouldn't be the driving force behind this
12 massive expansion the town is planning to
13 undertake.

14 For that reason we believe the town
15 should reject the expansion proposal.
16 Instead focus far more on recycling as an
17 alternative, and we believe the State
18 Department of Environmental Conservation
19 should only consider granting Brookhaven the
20 very limited option on an incremental basis
21 of landfilling what's remaining after its
22 recycling programs.

23 I thought about ash. Incinerator ash
24 is contaminated with an array of toxic heavy
25 metals and organic chemicals, and despite a

1
2 recent E.P.A. announcement that ash is deemed
3 exempt from hazardous waste regulations, ash
4 that's generated close to home often exhibits
5 characteristics of hazardous waste.

6 For example, even a State Department
7 of Environmental Conservation report released
8 earlier this year shows that leachate from
9 the Babylon ashfill exceeded the drinking
10 water standard for cadmium in four of six
11 samples, and exceeded the E.P.A. action level
12 for lead in five of six samples.

13 In addition, ash, because it comes
14 out of a very hot furnace, is often dry in
15 nature or dries out over time, and dust is
16 created, and the D.E.I.S. acknowledges the
17 dust concern, but we think that the air of
18 confidence that the D.E.I.S. expresses is
19 totally unwarranted.

20 For example, again right next door,
21 the ash landfill or the landfill in Islip, in
22 Hauppauge, has been stockpiling ash, tens of
23 thousands of tons of ash for the past year or
24 so.

25 Test results earlier this year showed

1
2 of the actual present hill of three
3 alternatives sites in Brookhaven Town.

4 What annoys me is that the original
5 G.E.I.S., the elected officials of this town
6 gave instruction that alternative sites
7 should be considered in the town for various
8 parts of the solid waste handling, and when
9 it's said and done, nothing was proposed for
10 sites other than those in the immediate
11 vicinity of the present landfill site.

12 So I find it fascinating that, as I
13 said, a site being a few hundred yards to the
14 east, a few hundred yards to the west, is
15 called an alternative site in Brookhaven
16 Town. It's a little characteristic of what's
17 going on.

18 In fact, when I was reading this
19 document I had a feeling I was reading
20 several documents, not just Brookhaven Town.

21 While I realize it isn't true, I
22 almost envisioned that the consulting
23 engineers that wrote the document hadn't
24 visited the site.

25 They were dealing with some things

1
2 that don't quite seem to bear on reality.
3 There's a major omission -- by the way,
4 there's some excellent things in this report.
5 I'll try to find time to admit that.

6 But there's an interesting omission
7 which I might argue disqualifies the whole
8 proposal, namely there's no characterization
9 of what's going to be dumped at that site.

10 As far as I'm concerned it can be
11 very easily done, and that's what annoys me,
12 that it isn't there.

13 First of all, I believe there has
14 been some testing done of Hempstead ash.
15 Therefore you can characterize the ash that
16 will be dumped, at least in the context of
17 what Hempstead currently generates.

18 Similarly, one of the consulting
19 engineers could spend an hour or two standing
20 at this landfill site and he would -- and
21 they would have some idea semi-quantitatively
22 how much putrescible material is going in,
23 but basically the issue of odors is shrugged
24 off on the grounds that there won't be
25 putrescible materials of any particular

1
2 extent.

3 You've heard allusions to odors.

4 Odors have been a serious problem, and odors
5 aren't going to go away with this, because
6 there is -- although the ash is not going to
7 generate odors, it is going to -- the
8 remainder will produce odors, and we can -- I
9 could spend five, ten or fifteen minutes of
10 tales of people who can't live in their own
11 yards, in addition to people who don't want
12 their kids out in the school yards at Hampton
13 Avenue thanks to the odors, which by the way
14 have been visibly better, and the town has
15 worked on that.

16 The catch is, in doing away with
17 odors, of course we've greatly enhanced the
18 problem of dust, and the dust is not only a
19 health hazard to on site workers and to some
20 nearby neighbors, but it can be a great an
21 major source of groundwater pollution.

22 I'm not going to argue about the ash
23 that stays in the landfill, but I will argue
24 about -- that the ash that blows off the
25 landfill either on the surrounding ground

1
2 within the landfill site or on the adjacent
3 grounds, that will be readily leachable
4 material for most of the heavy metals. Maybe
5 not awful, but most of the heavy metals in
6 it.

7 Actually the -- something that I
8 could envision that one could readily
9 monitor, but as a number of things in this
10 report, issues are shrugged off or they say
11 odor can be dealt with by making sure one
12 foot of fill covers at the end of the day,
13 these things aren't addressed.

14 So one thing that I think is
15 particularly necessary is a scheme to monitor
16 the wind blown ash, because I think you can
17 take as a given all of the metals in that can
18 be viewed as ultimately ending up in the
19 groundwater. That can be dealt with.

20 One of the things that pleased me in
21 the report is this is the first time we had a
22 reputable geological survey in on of the
23 town's environmental impact statements.

24 I will not -- since I have not gone
25 over and didn't see every boring when it was

1
2 taken, and didn't read every log there, I
3 can't say that and I won't verify it, but it
4 was a pleasure to see it, because that's been
5 one of our concerns in the past, that there's
6 not been a geological statement.

7 There is one thing that sort of
8 jolted me a bit in that, though, and that is
9 to make that geological survey they had to do
10 croings down to the magothy, and then they
11 indicated when they got done they filled
12 those up, and I nearly died.

13 One of our great problems has been
14 getting enough information of what the water
15 conditions are in the magothy, but when it
16 comes to suggestions that have to be done,
17 one of them will be now we have to go back
18 and put some new magothy wells back in,
19 probably in just the area where they filled
20 their magothy borings.

21 Now, there are many things that the
22 town has done right, and I don't want to take
23 a tremendous amount of time, other than to
24 remind the people in the audience that the
25 town very often has done things right and has

1
2 very often been in the forefront of doing
3 things.

4 The original lined landfill was the
5 first municipal landfill that was a lined
6 landfill in the country.

7 The contract with U.S.G.S., the U.S.
8 Geological Survey, to monitor the water was
9 done because the state that wanted the town
10 to monitor water didn't have a clue in Haides
11 how to -- what they meant by it, and so the
12 town contracted with the U.S.G.S..

13 The landfill's the first landfill
14 that has generated electricity that went into
15 the municipal electric -- into the electrical
16 network from methane from the landfill. The
17 town deserves credit for that.

18 I would -- while over the years I --
19 I've not been all too fond of the monitoring
20 of the water, I must say I think the -- the
21 most recent report of groundwater monitoring
22 that the town has done with their consultant
23 is really very, very good. They do deserve
24 credit for that.

25 The odors have taken too long to deal

1
2 monitor for wind born dust.

3 I feel particularly strongly, because
4 one thing that angers me is the fact that fly
5 ash is being mixed in with bottom ash, and is
6 the ash being delivered to the landfill site,
7 and the justification is that it's being --
8 its adverse effects are being reduced by
9 dilution.

10 If you take that view, then
11 everything that the town collects in its top
12 household pollutants program could be
13 perfectly well dumped on the landfill, on the
14 ground.

15 It too would be diluted once it's
16 there. That's a ridiculous argument as far
17 as I'm concerned.

18 Granted though as a fact of life
19 that fly ash is going to be delivered to the
20 town along with bottom ash, then I really
21 think that puts the pressure on the
22 monitoring.

23 In fact, I suspect it's the fly ash
24 which is responsible for some of the adverse
25 numbers that were being claimed by NYPIRG on

1
2 ash elsewhere.

3 I think there should be an appendix
4 which uses the present data that the town
5 must possess on ash contents; that at least
6 to that extent what you're going to put in
7 the landfill can be characterized.

8 I want to remind you in one of the
9 earlier documents discussing ash, one of the
10 ash or dust alleviation problems was the
11 suggestion that when the trucks dump the ash
12 they should dump it downwind.

13 That might be good for the truck
14 driver, but it indicates, I think, this scale
15 of the problem.

16 There -- there's, indeed, a dust
17 problem. Now, the town is boxed and the --
18 and I think you can have two choices.

19 Either you can say that the strain
20 that has been put on the surround -- on this
21 one area which has received all the trash is
22 so severe, the adverse effect on the two
23 school districts, on the South Country and
24 the Middle Island School Districts,
25 economically an otherwise, has been so severe

1
2 that the solution is do nothing and let the
3 roof fall in when the present landfill
4 capability goes.

5 That's one solution, and for some
6 people it's the logical one. I -- I think
7 that's not the appropriate solution. I'm
8 afraid I do believe that a Cell 5 is needed.

9 Of the three spots at the Brookhaven
10 site, namely to the east, to the west and to
11 the northeast, of the -- the site, the one
12 that's been chosen is -- is the least
13 undesirable, mainly because of issues of
14 proximity of groundwater to the -- to the
15 surface than the other two sites.

16 So by all means go ahead. By all
17 means seriously try to act on some of the
18 concerns you've heard from the other
19 speakers, and please spruce up some of the
20 slightly casual shortcomings I feel are in
21 the document. Thank you.

22 COMMISSIONER HEIL: Thank you for
23 your comments. Joop van der Grinten.

24 MR. VAN DER GRINTEN: Good afternoon.

25 COMMISSIONER HEIL: Good afternoon.

1
2 Good to see you again.

3 MR. VAN DER GRINTEN: Thank you. As
4 you know, I'm a resident of Southaven on
5 Yaphank Avenue, and I have the privilege --
6 well, the privilege to look out on the dump
7 and to smell the dump, but it's not very
8 beneficial for the resale value of my
9 property, so that's the first place that I
10 was against this landfill operation to begin
11 with.

12 But as now, a new cell is proposed.
13 I can say I'm definitely against it, because
14 as was already explained by better experts
15 than I, that the the ash out of Hempstead is
16 not sort -- is not normal operation of
17 everything from the household, so it is not
18 beneficial for that area, far from it.

19 Then another thing is we -- we
20 recycle in Brookhaven. That is very nice,
21 but that's only homeowners' waste.

22 If I understand correctly, commercial
23 waste is not recycled, so if we would do more
24 investigation in that territory that would be
25 adviseable, I think.

1
2
3 First -- and another thing is the
4 instruction of the homeowner, because if you
5 look at the homeowners' garbage, what they
6 put out, I put garbage out too, and I'm not a
7 big family. I live by myself, but I compost
8 and I sort myself and what I can use myself.

9 Many people don't dump everything on
10 the roadside, so a public education would be
11 -- would be very preferable.

12 So I can say -- I make it short. So
13 I'm against this increase of the dump.

14 COMMISSIONER HEIL: Thank you very
15 much. Mary Jo Farrell, South Country School
16 District.

17 MS. FARRELL: Good afternoon,
18 Commissioner. On behalf of the South Country
19 School District, Board of Education and
20 Superintendent of Schools, Dr. Joseph Valeria
21 (phonetic), I wish to respond to the town's
22 proposal to open another landfill cell, Cell
23 5 at the Town of Brookhaven Horseblock Road
24 site.

25 As you know, our schools have been
severely impacted during the past almost

1
2 three years.

3 Because of the present landfill and
4 the recapping process that is presently
5 underway, staff and students at the Hampton
6 Avenue School in particular began
7 experiencing respiratory and other health
8 related discomfort the during the 1990 to
9 1992 school years.

10 The intensity of discomfort for the
11 staff and students last year, school year,
12 was a deplorable, intolerable act by the Town
13 of Brookhaven.

14 It was only through the efforts of
15 the Consumer Protection Agency director,
16 Richard Kessel, that the town was finally
17 responsive to the residents in the
18 communities that surround the landfill.

19 These residents include the children
20 who attend our schools, whose safety, health
21 and welfare are of paramount concern to us.

22 We too are concerned about the
23 potential adverse effects on the groundwater
24 with the proposed Cell 5.

25 We too are concerned with potential

1
2 odor at Cell 5, but mostly with the potential
3 release of hazardous particulate matter in
4 the area, namely ash.

5 We continue to ask you to consider
6 other possible locations not in or near the
7 present site in the Town of Brookhaven for
8 the new cell, since this area in our schools
9 have borne the entire brunt of the town's
10 landfill operation for the past twenty years.

11 If Cell 5 is sited where proposed, we
12 ask that consideration be given to
13 compensating the school districts for having
14 to bear this burden. Thank you.

15 COMMISSIONER HEIL: Thank you, Ms.
16 Farrell. Debra Brown? Good afternoon.

17 MS. BROWN: Good afternoon. My name
18 is Debra Brown, and I'm a resident of
19 Shirley.

20 As some of the other speakers have
21 noted, I too saw that alternative sites are
22 really no alternative sites. They're still
23 adjacent to the landfill.

24 The proposed site seems to be
25 considered appropriate because the

1
2 groundwater is already of poor quality.

3 The poor quality is related to the
4 benzene, the dichlorobenzene, chlorobenzene,
5 mercury, hexaphenol that were found.

6 Also noted were nickel, cobalt,
7 aluminum and vernadium, which there are no
8 standards for these.

9 The air quality data was obtained
10 from monitoring at Babylon and Eisenhower
11 Park.

12 The substances monitored for are
13 particulates such as nitrogen oxide, carbon
14 monoxide, ozone and lead.

15 I really don't know whether these --
16 this data reflects the air quality above the
17 landfill, and what about other gases,
18 volatile organic compounds and heavy metals
19 not tested for?

20 It states in the D.E.I.S. that
21 significant fugitive dust impacts have not
22 been created. How do they know that it there
23 has not been any testing?

24 As far as the ash residue, the
25 environmental defense fund in 1987 suggested

1
2 that incinerator ash had the properties of
3 toxic waste.

4 In 1987 D.E.C.'s test of ash from six
5 New York State incinerators found that more
6 than half of all samples tested had exceeded
7 federal lead and cadmium levels for what
8 constitutes hazardous waste.

9 I'm also concerned that the ash may
10 contain deoxyns (phonetic). Even with
11 improvements in pollution control equipment,
12 metals and other contaminants, the toxicity
13 of ash increases.

14 Metals in the deoxyns (phonetic) pose
15 known health problems. Even low level
16 exposure over a long period of time can lead
17 to significant health problems. We are also
18 talking about potentially multiple exposures.

19 If this proposal does go through, I
20 feel that the ground and water should be
21 tested for deoxyns (phonetic) and purulent
22 besides organic compounds and metals as far
23 as air quality and dust impacts.

24 Let me quote phrases from the
25 D.E.I.S.. "Greatly reduced; not readily

1
2 acceptable to dust problems; further
3 minimized in sort minimal emissions; we will
4 mitigate these situations; acceptable health
5 risk."

6 You're speaking about visible dust.
7 I'm concerned about emanations of microscopic
8 particulate.

9 Therefore I think air monitoring
10 should be done at the site, and I think it
11 should include study for deoxyns (phonetic),
12 organic components and metals. Thank you
13 very much for listening.

14 COMMISSIONER HEIL: Thank you very
15 much, Ms. Brown. Lin Marie Dastis?

16 MS. DASTIS: Good afternoon. My name
17 is Lin Marie Dastis, and I live in Shirely,
18 just east of the landfill, and I'm here today
19 just to say that I'm opposed to the expansion
20 of the landfill because of all the reasons
21 that you've heard today, and for a very
22 selfish reason. I want to live a long,
23 healthy life with my family. I feel it's
24 being jeopardized. Thank you.

25 COMMISSIONER HEIL: Thank you.

1
2 -- when we purchased our home in the village
3 I assumed that my daughter would be going to
4 the neighborhood school right down the block.

5 I was not aware that during grades
6 four and five she would be going to the
7 Hampton Avenue School. I just learned this
8 two months ago.

9 This is of tremendous concern to me.
10 I can not express to you the depth of my
11 concern.

12 It is so severe, if this expansion
13 does go through and she goes to Hampton
14 Avenue School, she will not be going to the
15 school because we will move out of this Town
16 of Brookhaven.

17 I am very concerned about her health
18 and will not expose her to this risk, and I
19 ask that you consider the health risks of all
20 these small children going to these schools,
21 and as I said, this may cause us to leave
22 this town completely. Thank you for your
23 time.

24 COMMISSIONER HEIL: Thank you. Once
25 again, is there anyone else that would like

1
2 to make a statement for the record?

3 I thank you for your both patience,
4 your very lucid and well-thought out
5 comments.

6 Once again, your comments will be
7 addressed in the final Environmental Impact
8 Statement.

9 The hearing will -- there will be
10 another hearing tonight at 7:00 p.m., if you
11 wish to come back and listen to further
12 comments.

13 The written comments will be accepted
14 up until December 4th, so if you're heading
15 home and you suddenly decide that you should
16 have said something or added something to
17 your comments, please feel free to write to
18 me at the town offices at this location up
19 until December 4th.

20 Once again, thank you very much for
21 your patience and your comments.

22 (Whereupon, at 2:57 p.m., the within
23 hearing was adjourned)

24 (Whereupon, at 7:00 p.m., the within
25 hearing was resumed)

1
2 COMMISSIONER HEIL: Good evening.

3 The town of Brookhaven, to further implement
4 its solid waste management plan, proposes to
5 develop a seventy-eight acre landfill
6 expansion which will be composed of fifty-six
7 acres of landfill footprint and twenty-two
8 acres of ancillary facilities located within
9 the property boundaries of the Town of
10 Brookhaven Waste Management Facility site.

11 The proposed landfill expansion area,
12 identified as Cell Number 5, would be
13 developed on the western portion of the five
14 hundred and thirty-four acre waste management
15 facility site located on the south side of
16 Horseblock Road at Woodside Avenue in the
17 Hamlet of Brookhaven.

18 The expansion area will be used to
19 dispose of unprocessable waste from the
20 town's waste management system, Brookhaven
21 downtime wastes from the solid waste
22 processing facilities utilized by the town,
23 ash from the Hempstead Energy Recovery
24 Facility, processed residues from the town's
25 material recycling facility and from solid

1
2 and yard waste composting, construction and
3 demolition debris process residue, car
4 shredder and clean fill.

5 The expansion area will be lined with
6 a double composite liner system in accordance
7 with state regulations and would be
8 constructed in nine phases to match waste
9 flows.

10 The expansion area is projected to be
11 used for eighteen years based on current
12 design waste flows.

13 On November 20th, 1991, the Town of
14 Brookhaven prepared a Full Environmental
15 Assessment Form, announcing to potentially
16 involved agencies and interested parties that
17 a Type 1 project was being proposed, and
18 seeking concurrence of involved agencies in
19 having the town serve as lead agency.

20 On January 21st, 1992 the Town of
21 Brookhaven formally declared itself lead
22 agency under the State Environmental Quality
23 Review Act, adopted a positive declaration
24 for the project and issued a notice of
25 positive declaration and notice of intent to

1
2 prepare a Draft Environmental Impact
3 Statement.

4 The notice set forth the town's
5 determination that the proposed project could
6 have potentially significant impacts on the
7 environment and that a D.E.I.S. would be
8 prepared.

9 Subsequently, the notice was
10 distributed to all involved agencies and
11 published in the Environmental Notice
12 Bulletin. A public scoping meeting was held
13 on February 18th, 1992.

14 The purpose of this evening's public
15 hearing is to receive comments on the Draft
16 Environmental Impact Statement.

17 I am James Heil, Commissioner of the
18 Department of Waste Management. The town
19 board has asked me to chair this hearing on
20 its behalf.

21 A written record of the hearing is
22 being taken by a stenographer and will be
23 transmitted to the town board.

24 I'll acknowledge at this time the
25 presence of Councilman Joseph Macchia,

1
2 Michael Groben to my left, an assistant town
3 attorney, and representatives of the
4 consulting firms of Wehran-New York and
5 Dvirka and Bartilucci, and the law firm of
6 Nixon, Hargrave, Devans and Doyle.

7 We request those that -- we request
8 that those wanting to make a public statement
9 complete a card at the rear of the room.

10 Persons who do not fill out a card
11 will not be called to speak. Elected
12 officials and representative agencies will be
13 called first, followed by those completing
14 cards in their order of receipt.

15 The hearing will remain open this
16 evening until all who have submitted cards
17 have spoken.

18 I request for the convenience of the
19 attendees, that comments be limited to
20 approximately five minutes.

21 Persons who desire to speak for
22 longer than five minutes can request
23 additional time after all others who desire
24 to comment have spoken.

25 Depending on the hour, we'll try to

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be reasonable in accomodating such requests. If you have a written version of your statement, please submit it to the stenographer.

The purpose of the hearing, once again, is to receive comments on the Draft Environmental Impact Statement, not for the town to respond to questions regarding the project.

All substantive comments and questions will be responded to in the Final Environmental Impact Statement that will be issued following the close of the comment period.

In addition, written comments on the Draft Environmental Impact Statement will be accepted until December 4th, 1992.

Comments should be addressed to James Heil, Commissioner, Town of Brookhaven, Department of Waste Management, Building 5, 3233 Route 112, Medford, New York 11763.

Persons who speak at this hearing may but not need repeat their comments in writing. Oral and written comments will be

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2 accorded equal weight.

3 The town contemplates preparing a New
4 York State Department of Environmental
5 Conservation Part 360 application for this
6 project.

7 The application will contain specific
8 design information and a detailed
9 hydrogeologic report.

10 The permit application may be the
11 subject of a public hearing conducted by the
12 New York State Department of Environmental
13 Conservation.

14 The town thanks you for your
15 interest, and if there are no questions on
16 the hearing procedure format, I will call the
17 first speaker.

18 Are there any questions on the format
19 and how we intend to run the hearing? Okay.
20 Seeing no questions, we will ask Nanette
21 Essel, Lillian DiPaulo and Ralph Wall as the
22 first speakers.

23 MS. ESSEL: Good evening. My name is
24 Nanette Essel, and I'm speaking on behalf of
25 the Brookhaven Citizens Solid Waste

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2 **Alternative Coalition.**

3 I'm on the board of directors. I'm a
4 co-chairman. I have two other board of
5 director members with me, Lillian DiPaulo and
6 Ralph Wall. Good evening.

7 **COMMISSIONER HEIL:** Good evening.

8 **MS. ESSEL:** Our review of the
9 D.E.I.S. has arrived at a series of basic
10 underlying issues about the adequacy of the
11 town's solid waste management plan, the
12 location, scope, operation and cost of Cell 5
13 and the town's continued heavy reliance on
14 landfilling well into the future.

15 I'd first like to discuss the siting
16 of this plan, and I would like to have a
17 question cleared up specifically about the
18 land that the landfill, Cell 5, is planned to
19 be constructed on.

20 The town site analysis plan was
21 initially completed in 1989, prior to the
22 time much of the acreage on which Cell 5 is
23 proposed was owned by the town.

24 This acreage was gifted or given to
25 the town by John McNamara in exchange for

1
2 high density development granted him for his
3 proposed Regency Oaks subdivision on the
4 north side of Woodside Avenue.

5 There was a transfer of development
6 rights for T.D.R., in which Mr. McNamara
7 could build additional homes on his piece of
8 property across the street if he dedicated
9 this particular piece or Cell 5 was to be
10 built to the Town of Brookhaven.

11 The problem that I have is I happened
12 to be at that planning board meeting where
13 this was discussed, and from the minutes that
14 I have received and the decision calendar,
15 which is actually the voting on it, the
16 people were led to believe that this was to
17 be open space kept in its natural state as a
18 buffer.

19 And I'd like to read into the minutes
20 a very short statement that would lead me to
21 the conclusion, and then maybe when you do an
22 F.E.I.S. this can be discussed and we can try
23 to come to terms with what happened, because
24 a lot of people feel very bad on how this all
25 of a sudden turned into an ashfill landfill

1
2 for the Town of Brookhaven for the next
3 eighteen years.

4 The meeting was June 13th, 1988. The
5 attorney for the applicant was Larry Holt,
6 and at that time Phil Sanderman was the town
7 attorney, and the first time it is mentioned
8 as far as this being open space was Mr.
9 Minello (phonetic) from Land Designs, a
10 consultant for Mr. McNamara.

11 Minutes are, "Yes. Mr. Chairman,
12 members of the board, as Mr. Holt has
13 indicated, the proposal called for the
14 development of just the north side of
15 Woodside Avenue, between Woodside Avenue and
16 Horseblock Road, a total of one hundred
17 eighteen acres, approximately seven hundred
18 and ninety-five units broken down into four
19 separate and distinct villages for
20 construction and sales purposes."

21 "Then he goes to point out, "We are
22 talking -- we are talking in terms of
23 approximately eight point seven developed
24 units to the acre, which is a fairly dense
25 development.

1
2 "However, when you add up all the
3 acreage at the southern portion as well as
4 the green space left on the northern portion,
5 we are talking in terms of two hundred acres
6 of the entire two hundred forty acres that
7 would be left in green or natural state."

8 There's also a question asked by Mrs.
9 Linda Peterson, who is a member of the town
10 planning board, and it was also from the June
11 13th, 1988 meeting on Regency Oaks in
12 Yaphank.

13 Mrs. Peterson asked of Mr. Holt,
14 quote, "One hundred twenty-five acres you are
15 giving away. Is that covenanted to remain
16 forever natural?", end of quote.

17 Mr. Holt, quote, "The town -- I can't
18 remember. Phil, can you remember?" Mr. Holt
19 was turning to Mr. Sanderman.

20 Quote, "We are giving it to the
21 town." Mr. Sanderman, quote, "It is to be
22 dedicated to the town for general municipal
23 purposes.

24 "It will never be developed, but the
25 town does not take property for -- by any

1
2 developmental entity in the state that is
3 subject to a covenant, so when we take it, it
4 is free and clear of any covenants, but I
5 believe it is the intention to leave it open
6 and natural as a buffer area."

7 Now, when he said it will never be
8 developed, I would say that most people that
9 live near where this is proposed would sure
10 as heck rather have it left residential than
11 as an ashfill.

12 At the town planning board meeting of
13 November 13th, 1989, from the decision
14 calendar, which is actually when they voted
15 on it, they call it the decision calendar,
16 the site plan or the site plan application,
17 Mrs. Linda Peterson again said, "I make this
18 motion resolution on the application known as
19 Regency Oaks. We make the following
20 findings."

21 Now, the findings are part of the
22 motion. "Number 1, the property in question
23 has been zoned residential since 1937 and
24 obtained cluster treatment approval in 1972.

25 "Denial of this application as

1
2 presented could jeopardize the town's much
3 needed acquisition of substantial acreage,
4 approximately two hundred fifty acres in all,
5 dedicated by the developer owner for landfill
6 buffer areas and other parkland and
7 recreational areas."

8 And I don't know how the Town of
9 Brookhaven can now turn around and say this
10 is where Cell 5 will be constructed, five
11 hundred feet away from those very people who
12 attended that hearing, and they put all the
13 complaints in and they were told don't worry.
14 It's going to be left in its natural state.

15 So I think that there's a real
16 problem about you're saying, "Well, this is
17 the site now. We switched it from the east
18 to the west."

19 That has to be discussed and looked
20 at very carefully, because this is a legal
21 document.

22 It's something that is in the
23 minutes, and I think it's important to
24 realize that when you build something like
25 this, the impact is tremendous, and to have

1
2 had it as part of a swap by a developer and
3 have it known to the public that this, indeed
4 -- that it was supposed to be for totally
5 different purposes, I think it's -- it really
6 behooves the town to make good on its word.

7 Lillian?

8 MS. DIPAULO: The town is seeking to
9 expand the landfill. The town also needs
10 approval for its solid waste management plan.

11 Cell 5 is part of the solid waste
12 management plan. I believe after reading the
13 D.E.I.S. that the solid waste management plan
14 is in need of revision.

15 The D.E.I.S. states on Page 1-3 that
16 the purpose of Title 7 is to insure that the
17 solid waste management is conducted in a
18 safe, efficient, economic and environmentally
19 sound manner.

20 Also, the New York State Solid Waste
21 Management Act of '88 declares that solid
22 waste management hierarchy should be to
23 reduce, reuse, recycle, to recover energy
24 from incineration and then to dispose it an
25 appropriate, approved way.

1
2 I feel that the solid waste
3 management plan does not adhere to this
4 hierarchy, and it does not because, number
5 one, it does not incorporate commercial waste
6 in its recycling program.

7 A state law went into effect on
8 September 1st, 1992 that required that all
9 municipalities adopt an ordinance which would
10 require recycling.

11 I want to know how the town can
12 comply with that if it is not recycling
13 commercial waste.

14 The way I see the solid waste
15 management act, it's declaring that we must
16 reuse, reduce and recycle, and incinerate and
17 landfill last.

18 We cannot conform to the hierarchy if
19 we are not recycling commercial waste, nor
20 can we follow the ordinance which says that
21 we are proving to do the most economical
22 thing.

23 We have no figures for what it is
24 costing us to expand the landfill, true
25 figures.

1
2 I think we need first to begin to
3 recycle commercial waste, incorporate a don't
4 bag it program, in order to have a true
5 evaluation of the cost of our waste treatment
6 and how we manage it.

7 To approve Cell 5 would be adhering
8 to the terms of the trash for ash agreement,
9 the way I can see it, because Mr. Heil in his
10 own words told me that waste treatment has
11 been reduced by thirty percent since January.

12 I do not see how we can predict what
13 our needs capacities will be for the next
14 eighteen to twenty years.

15 So what I -- I am asking for is for
16 the town to follow the hierarchy first, to
17 see what it costs and to do the least
18 expensive thing.

19 The D.E.I.S. states that the landfill
20 will only be used for ash from the Hempstead
21 incinerator as well as our own biproduct
22 waste.

23 I would like to see some kind of
24 confirmation, some kind of legislation that
25 would guarantee that that would be the truth.

1
2 I'd also like to see a true financial
3 statement of the cost of this expansion, with
4 all comparisons considered.

5 My final statement. The landfill has
6 been impacting on approximately four percent
7 of the residents of the Brookhaven.

8 We are being told that we have to do
9 the trash for ash deal, that we have to
10 expand the landfill in order to save twenty
11 million dollars in shipping costs.

12 We are not asking to have our garbage
13 shipped off Long Island. All we are asking
14 for is to have a landfill that is used only
15 for the Town of Brookhaven and a landfill
16 that fits our needs.

17 If, indeed, the town is making money,
18 the money that it is making should be
19 funneled back into the community that has
20 taken the largest impact.

21 What the town is asking is for four
22 percent of the residents to take the impact
23 on something that impacts -- that is to the
24 benefit of a hundred percent of the
25 residents.

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However, I don't feel that they can prove they are saving money until they can begin to file -- follow the hierarchy.

Mr. Lamura has said to us at a meeting that host fees are our consideration. However, I see no mention of them at all in this D.E.I.S., and until all financial aspects are considered, I think that the D.E.I.S. is insufficient, and as I said, the solid waste management plan is insufficient and is in need of revision. Thank you.

COMMISSIONER HEIL: Thank you.

MR. WALL: I want to speak about monitoring operations. The D.E.I.S. acknowledges the adverse effect on the Cell 5 expansion.

It discusses leachate generation, drainage problems, soil erosion, groundwater pollution, air pollution, noise, gas generation and odors.

It then states in broad generalities how all of these problems would be controled or mitigated.

Thus it would seem there should be no

1
2 problem with Cell 5, but it's hard to
3 envision that the town could effectively
4 implement and enforce all the procedural
5 safeguards proposed to solve the
6 environmental problems of Cell 5.

7 These safeguards include waste
8 treatment monitoring on a truck by truck
9 basis, surface water drainage, hazardous
10 waste detection, sewage sludge standards,
11 leachate monitoring and dust control.

12 On dust control, for example, the
13 D.E.I.S. states that almost no dust is
14 expected from the ash as it is received in
15 wet form.

16 However, it does cause it. It does
17 cause a dust problem if it will be wetted
18 down.

19 Who will decide whether dust is a
20 problem? How will a two hundred thirty foot
21 high mountain of ash be wetted down?

22 Who will take public input to get the
23 town to correct the problem, as was the case
24 with the odor problems with the existing
25 landfill?

1
2 This is just one example of the
3 generalized responses provided to address
4 problems raised in the D.E.I.S..

5 They strike us as pie in the sky
6 platitudes designed to get through the
7 approval stages of Cell 5.

8 The -- if the town is intent on
9 following through with all of safeguards
10 delineated in the D.E.I.S., we ask, have
11 operating procedures been drawn up?

12 Have staffing requirements been
13 considered? Very costs been calculated? If
14 so, these should be issued as a supplement to
15 the D.E.I.S.. If not, the D.E.I.S. should be
16 rejected as deficient.

17 MS. ESSEL: On water and air testing,
18 the D.E.I.S. indicates that groundwater tests
19 will be made quarterly.

20 That is not adequate, given the
21 proximity to the Suffolk County Water
22 Authority well field.

23 We believe that the tests should be
24 conducted by independent testing labs, and
25 that the test results be readily available

for public scrutiny.

The D.E.I.S. is deficient in not providing for air testing for both gas emissions and fugitive dust and must -- which must be provided for.

Ash from the Hempstead incinerator will be stockpiled here two hundred thirty feet high in the air.

Since a presort of trash is not performed at Hempstead prior to incineration, ash should not be air piled here.

If it is done, then strigent ongoing air testing at the landfill site and a strategic location in the community is important to safeguard local residents.

A supplement to the D.E.I.S. is required to address air testing and to augment water testing.

Also, on host fees that Lillian mentioned before, I wanted to add that it seems the Town of Brookhaven really gave away the whole store in not going to Browning Ferrous (phonetic) or Hempstead Town, who is saving a quarter of a billion dollars over

1
2 eighteen years by having us take their ash.

3 We are getting nothing, nothing
4 compared to the host fees that other towns
5 negotiated for their communities.

6 There's -- this is from Biocycle
7 World, front page story. "The Wall Street
8 Journal described how major disposal
9 companies like Waste Management and Browning
10 Ferrous (phonetic) Industries agreed to pay
11 local communities handsome host fees to site
12 landfills."

13 Here we are. We're siting an
14 ashfill, the worst -- the worst of all
15 possibilities. That's what we've got here.

16 "The secrecy helps the companies, but
17 some towns and counties are shrewder at
18 negotiating than others, and a few don't even
19 know to ask about fees." I guess we didn't
20 ask about fees at all.

21 There are wide disparities in host
22 fees by providing a site for a landfill. The
23 Town of Mobile, Arizona got seventeen
24 thousand five hundred dollars, a school air
25 conditioner -more than we got- a two-trailer

1
2 community center -more than we've gotten-
3 five thousand dollars in camp scholarships
4 and a Christmas party, more than we've
5 gotten.

6 In sharp contrast, for instance, in
7 Riverside County, California, they arranged
8 for more than fifteen million dollars in
9 annual host fees for the landfill expansion.

10 The article continues. "Many towns
11 either lack good information or can't afford
12 the lawyers and consultants needed to help
13 get a good deal."

14 Well, what did we lack? We sure
15 lacke a lot if this is five hundred feet from
16 someone's home. I think it's a disgrace, a
17 disgrace.

18 COMMISSIONER HEIL: What issue is
19 that?

20 MS. ESSEL: It's the issue that
21 Brookhaven Town is in, bragging about our
22 materials recycling facility.

23 It's the Journal of Waste Recycling,
24 January 1992. The article is about
25 Brookhaven Town. It's called, "The Tale of

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Two MRP's."

MR. WALL: I'll make this brief because we're over our time. We found the cost information provided in the D.E.I.S. to be confusing.

Two years ago, during the trash for ash deliberations, we were told that it would cost forty-five dollars a ton to landfill in Cell 4.

The D.E.I.S. says it's going to cost us only twenty-four dollars a ton, and this includes the construction, operating -- operation, cap and post-closing maintenance cost of Cell 5.

Now, in Cell 5 we have a state of the art proposal, double liners, gas collection system, monitoring wells, et cetera.

How is this going to cost only half of what it took to landfill a ton of garbage in Cell 4?

We believe the D.E.I.S. is deficient in this regard and, again, we feel we should have supplemental information.

Lillian pointed out the fact that we

1
2 must be sure that we are pursuing the most
3 economical alternatives for waste disposal,
4 and until we have this data it's impossible
5 for us or for the town to determine whether
6 we're on the right path.

7 COMMISSIONER HEIL: Thank you. Due
8 to the next speaker's age we're going to ask
9 her to speak out of turn. It's Erin Fehn.

10 (19) MS. FEHN: Good evening. Thank you
11 for the opportunity to speak with you tonight
12 regarding my concern about the future of the
13 Brookhaven landfill and its effect on me and
14 its effect on our community and my school.

15 My name is Erin Fehn, and I'm a fifth
16 grade student in Mr. Crowley's class in
17 Hampton Intermediate School.

18 As you know, my school is the closest
19 school to the landfill, and a lot of my
20 classmates are greatly affected by our very
21 bad neighbor, the town dump.

22 Last year I was allowed to speak at a
23 meeting of this board, and I asked you to
24 help change the terrible conditions that my
25 friends and I face everyday in school because

1
2 of the landfill.

3 During the past year nothing has
4 changed. The air still smells. Our
5 schoolyard is still littered with the garbage
6 that blows from the dump on -- on our school
7 property.

8 More seagulls than ever land on our
9 playground to eat the trash, and children
10 still complain that they have irritated eyes,
11 problems with breathing and headaches.
12 Nothing that has been done by the town has
13 changed anything for very much.

14 We have been told that Brookhaven
15 plans to expand the landfill by building Cell
16 5. This will increase the problem that we
17 already face.

18 Our air and water will be more
19 polluted, and dangerous ash could blow into
20 the wind that we breathe. Our bay will be
21 more at risk from the expanded landfill.

22 Some children can look out of the
23 school window and see real mountains. At the
24 Hampton Intermediate School you look out the
25 window and see a mountain of garbage.

1
2 We now plan to make the landfill even
3 higher than it is now. It's a shame that
4 Brookhaven's most visible landmark is the
5 landfill that's next to our school.

6 Our principal, Mr. Wimmer (phonetic),
7 and teachers have made Hampton Avenue
8 Intermediate School a wonderful place to
9 learn, but the landfill has made it a dirty
10 and dangerous place to live.

11 On behalf of my classmates, I ask you
12 to study different methods of dealing with
13 our trash problem.

14 The landfill has been created many
15 new and dangerous problems. We want to live
16 -- we -- we want to live and study in a safe
17 and healthy environmental, and we ask you to
18 leave the land for Cell 5 undeveloped. Thank
19 you.

20 COMMISSIONER HEIL: Thank you.

21 Claire Goad?

22 MS. GOAD: My name is Claire Goad,
23 and I represent the Southaven Civic
24 Association, and I am a teacher at the
25 Hampton Avenue School.

1
2
3 Anyone who has read the local
4 newspapers this last year knows that
5 building, maintaining and capping a landfill
6 is very costly to all taxpayers.

7 Before allowing Cell 5 to be built, I
8 would hope that Brookhaven Town is told to
9 recycle all commercial waste and to have a
10 don't bag it program.

11 With these two programs in place, the
12 need for Cell 5 would be minimal, unless of
13 course we are building Cell 5 as an ashfill
14 for the Hempstead incinerator.

15 And why an eighteen-year capacity?
16 Hopefully technology will help us to reduce
17 our waste stream before eighteen years go by,
18 or -- or are we really building an
19 eighteen-year ashfill for the Hempstead Town
20 incinerator?

21 Our community, children and adults,
22 have lived with the landfill for too many
23 years already.

24 This community has more than paid its
25 dues these last twenty years, and you really
expect us to welcome another eighteen more?

1
2 We don't believe you when you tell us
3 the odors only affect us short term. I teach
4 at Hampton Avenue School and live in
5 Southaven.

6 We still smell the landfill.
7 Last Thursday was especially bad at school.
8 No matter what time of day, it seems the odor
9 is usually present someplace in our school
10 district or in our community.

11 When we had meet the teacher night at
12 Hampton Avenue, the parents came to our
13 classroom in Cluster B asking what the smell
14 was. Is it always this bad?

15 To be perfectly honest, we, the
16 teachers, really didn't smell anything. You
17 see, unless it's really bad we don't even
18 notice it anymore.

19 This brings me to another point, the
20 health of the students and staff at Hampton
21 Avenue School.

22 If you would, please bear with me for
23 a moment. I would like to read excerpts from
24 an informal survey that was done yesterday
25 and today among the staff of our building.

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This is an informal survey: "Do you suspect that working next to the landfill has started or increased allergies, headaches, et cetera?"

Please state your name and indicate any symptoms that you have gotten after you started working in this building."

Staff Member Number 1: increased allergies; daily prescription medication to include a nasal spray. Eyes are all irritated. Before I only took over the counter medication a few times a year.

Number 2: dizziness. Medication to control symptoms. Constant visits to ENT specialists.

Number 3: developed chronic nasal congestion over this past year. Higher frequency of bronchial irritation. Cough, last longer than it used to. Congestion more severe.

Number 4: I have been hoarse since September. Number 5: congestion. 6: headaches.

7: headaches. 8: chronic allergies,

1
2 asthma. Chronic coughing. I have lost two
3 months of work. Chronic cough keeps me up
4 all night. This teacher just came back to
5 work. Migraine headaches.

6 Number 9: so severe that I now have
7 to go to get a prescription. Number 10:
8 chronic sinusitis and frequent sinus
9 infections. Bronchitis two to three times a
10 year. Difficulty breathing. Sinus
11 headaches.

12 Number 11: constant headaches. I
13 have a prescription for this problem. Number
14 12: headaches.

15 13: severe sinusitis, bronchitis,
16 wheezing, shortness of breath, headaches and
17 pneumonia.

18 14: headaches. 15: more frequent
19 sinus problems. Constant stuffiness, itchy
20 eyes and blurred vision.

21 16: dizziness. Sinus problems.
22 Congestion. Frequent upper respiratory
23 infections. Symptoms improve within an hour
24 or two of leaving the school and are minimal
25 during vacations.

1
2 17: headaches at least three times a
3 week. Bronchitis. Constant problem with
4 laryngitis.

5 18: increased sinus headaches,
6 dizziness, itchy eyes. Sometimes blurred
7 vision.

8 19: I am unavailable to wear my
9 contact lenses for more than two days. I
10 also have frequent headaches during the week.

11 20: On the first day of school I
12 developed a tightness in my chest which
13 evolved into a terrible allergy related cold
14 that lasted for two and a half weeks. I have
15 constant headaches and chronic rhinitis which
16 did not subside.

17 21: Constant stomach aches,
18 stuffiness in nose. 22: Headache. 23: That
19 stench in the morning, especially with the
20 northeast wind, is disgusting. When it's
21 present, headache and congestion. Even when
22 it's not present, many days of discomfort,
23 teary eyes, coughing and headaches occur.

24 24: I have been hospitalized seven
25 times for asthma since she came to work in

1
2 the building. Burning and itchy eyes.

3 25: Increase in headaches, nausea.

4 Also sore throats are increased. 26:

5 Increase in headaches. Have lost my sense of
6 smell.

7 27: Headache, sinusitis. 28:

8 Headaches. As a matter of fact I have one
9 now.

10 29: Constant congestion, sinus
11 headaches. On prescribed medication. Each
12 year gets worse. This is year three in the
13 building.

14 30: Headaches and burning eyes. 31:
15 Increased my allergies greatly. Itchy eyes,
16 stuffiness, sore throat.

17 32: Eye irritation, congestion,
18 cough. 33: Headaches and allergies began one
19 week after school reopened.

20 34: Makes my sinus go crazy. 35:
21 Eye irritation. 36: Headaches, nausea,
22 burning eyes and running nose.

23 37: Headache, congestion, sore
24 throat, runny nose. 38: Chronic postnasal
25 drip. Loss of sense of smell. Congestion

1
2 very frequently. Eyes water. I'm now on
3 medicines for allergies.

4 39: Constant headaches and sometimes
5 dizziness. 40: And this is a person who
6 works in two buildings, not just Hampton.
7 Allergies are much worse in this building.
8 Eyes are irritated and constant sneezing.

9 41: Frequent headaches, sore throats
10 and respiratory problems. I have had
11 pneumonia twice and missed three weeks of
12 school the second time. I feel nauseous on
13 the days when the offensive odors are most
14 noticeable.

15 42: Headaches, nausea, frequent
16 allergy attacks. Constant postnasal drip.
17 43: Headaches, eye irritation, frequent
18 allergy attacks.

19 44: Congestion, runny eyes and
20 sneezing. I am presently on Hismanal for
21 allergies. I can no longer wear my contact
22 lenses. I have postnasal drips and
23 headaches.

24 45: Headaches occur at least three
25 or four days out of our five days at school.

1
2 Blurred vision and sinus irritation. I
3 usually do not experience these symptoms
4 unless I have them at work.

5 46: Developed allergies. The
6 allergies have caused temporary hearing loss.
7 I feel nauseous on days when the dump smells.

8 47: The childhood allergies I had
9 have redeveloped with a vengeance. 48:
10 Bronchial asthma has intensified. Coughing.

11 49: Increased visits to allergist.
12 Asthma medication. 50: Headaches, loss of
13 voice.

14 51: Headaches and runny nose. 52:
15 Headaches. Constant postnasal drip.
16 Irritation of throat and loss of voice at
17 times. 53: Frequent headaches. Itchy eyes
18 and postnasal drip.

19 And this is not all. Parents are
20 saying their children have more colds,
21 allergies, headaches and upset stomachs when
22 they come to Hampton School.

23 Last year a staff member and her
24 daughter, who is Hampton student, were on
25 allergy medications all year.

1
2 They have since moved to Patchogue,
3 and the mother no longer works at Hampton.
4 They have not had to take any medication
5 since they left.

6 Many staff members who do not live in
7 the district find that their symptoms
8 disappear during weekends and vacations.

9 Those of us who live and work here
10 have to go away on vacation for this to
11 happen.

12 I strongly urge the State Health
13 Department to investigate these problems
14 before Cell 5 is allowed to be built.

15 And now we have ash, fly ash and
16 bottom ash, toxic ash, lead, all to be put in
17 Cell Number 5.

18 What will happen on a windy day? How
19 effective will the new water truck really be?
20 We're concerned about our health, the health
21 of our children, being able to sell our
22 homes, public water for everyone in the
23 community.

24 We're concerned with Carman's River,
25 the Wertheim (phonetic) Wildlife Refuge and

1
2 Great South Bay.

3 We're concerned about the quality of
4 our lives in this community. I am asking you
5 to seriously consider the health of those who
6 live and/or work in the community.

7 I am asking you to reduce the waste
8 stream. I am asking you to give everyone
9 public water.

10 I am asking you to agree to end the
11 Hempstead agreement after eight years. Care
12 about us. Care about our children. We pay
13 taxes too.

14 COMMISSIONER HEIL: Thank you.

15 Thomas Ludlam.

16 MR. LUDLAM: My name is Thomas
17 Ludlam. I'm here speaking on behalf of the
18 Brookhaven Village Association.

19 Those of us who live in the Hamlet of
20 Brookhaven are very much concerned about the
21 expansion of the landfill far beyond its
22 original scope.

23 We're concerned about its present
24 impact on the local environment and by the
25 evident threat of a much greater impact in

the future.

Thus we have studied this D.E.I.S. with some care and present whoever our most urgent comment.

Let me start by talking about the effects on our water resources. The contamination of the groundwater in residential areas southeast of the present landfill is well documented.

The leachate plume that is advancing into Brookhaven Hamlet is a direct result of the failure of liners of existing cells of the landfill.

There is a real possibility that contamination in the landfill will find its way into the magothy aquifer, a major source of public drinking water for Long Island, also the source for those of us who have private wells in Brookhaven Hamlet.

The Suffolk County Water Authority pumping station on Station Road, which pumps from the magothy, lies just a few thousand feet of the -- west of the proposed Cell 5.

We have questioned the safety of

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1
 2 these wells should the magothy be
 3 contaminated by the landfill, and further
 4 whether this pumping can enhance local
 5 underground flow patterns, which could direct
 6 surface water towards the magothy.

7 Given these concerns, we were pleased
 8 to see that the town has responded to New
 9 York State's requirement by initiating an
 10 extensive hydrogeologic study, including the
 11 installation of new monitoring wells.

12 Nonetheless, we find that the
 13 D.E.I.S. is insufficient in this area in
 14 three important ways.

15 First, the document presents no
 16 quantitative data or analysis to show the
 17 landfill is not in the deep recharge zone.

18 Second, the pumping tests that were
 19 carried out by Lagette (phonetic) at the
 20 Suffolk County well field included only wells
 21 which pump from the upper glacial aquifer.

22 Thus they do not address the
 23 consequence of high volume pumping from the
 24 magothy in proximity to the landfill.

25 And third, the D.E.I.S. did not

1
2 address the mitigation of the existing plume
3 of groundwater contamination in the landfill
4 and its continued development if leachate
5 should escape from the new Cell 5.

6 We find it unacceptable that the
7 D.E.I.S. cites the existing groundwater
8 contamination from the landfill as a
9 mitigating factor in weighing the potential
10 impacts of Cell 5 on the scope of this
11 project.

12 We agree with many other civic
13 organizations and environmentalists that
14 argue that the total capacity for Cell 5 is
15 far larger than our town requires or that a
16 prudent plan would call for.

17 The technologies for dealing with
18 solid waste as well as the very nature of
19 solid waste is changing in ways that are hard
20 to predict.

21 The coming decades like the past is
22 bound to bring significant advances in the
23 way our society deals with reduction and
24 recycling waste.

25 Specifically, we think that the

1
2 looking into a full eighteen years of an
3 inter-municipal agreement with Hempstead with
4 an overscoped and apparently undercosted
5 landfill is an economic as well as
6 environmental mistake.

7 Finally, I would like to make a
8 comment about the management. This project
9 is a large, sophisticated undertaking.

10 The D.E.I.S. does not present a plan
11 by which the town intends to manage in
12 undertaking in gaining control overall of
13 many eventualities which can lead to
14 environmental and economic impacts.

15 In the past liners have failed.
16 Leachate collection systems have failed. The
17 gas flaring system has failed. Environmental
18 monitoring has been woefully inadequate.

19 The D.E.I.S. addresses these kinds of
20 issues and it presents engineering responses,
21 but how are we to take this, as was said
22 earlier, just pie in the sky?

23 How is this going to be managed? Who
24 is going to be responsible? Who's going to
25 be responsible at each phase?

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2 The people in this community put
3 their lives into these homes. Vinyl siding
4 and other improvements were installed inside
5 and outside the home.

6 The people invested heavily in their
7 homes. Some refinanced their mortgages to
8 make the improvements.

9 Others worked two jobs or even three
10 to make ends meet just to stay here for the
11 future.

12 It looked good. The town said the
13 landfill was going to close. Could anybody
14 dispute the town if they gave their word?

15 On October 15th, 1979 the head of
16 operations of the Town of Brookhaven's
17 sanitation department, Mr. James Heil, filed
18 a completed environmental assessment with the
19 State of New York Department of Environmental
20 conservation. This form is called an E.A.F..

21 And on this E.A.F., under
22 description, it is written completion of a
23 solid waste landfill project.

24 On the last page of the E.A.F., Mr.
25 Heil describes the project as a landfill

1
2 project in 19 -- beginning in 1973 and
3 closing in 1988, with a completed ski
4 mountain and then the beginning construction
5 of other park facilities. Everything still
6 seemed to be in order.

7 In 1985 the state tried to go into
8 the ashfill business, but the attempts by New
9 York State to build an ashfill failed.

10 The Town of Brookhaven was a
11 principal player in the attempts to stop the
12 state's regional ashfill. Why?

13 In the meantime, the town is building
14 a sanitary landfill higher and higher,
15 possibly to the height of a ski mountain.

16 If you have ever been to our
17 landfill, you can not miss the sight of
18 papers plastered against the perimeter fence,
19 with plastic bags and anything else that is
20 not nailed down.

21 The sight at times is awesome. As
22 you climb the road to the landfill area you
23 pass piles of metal stacked for the recycler.

24 You arrive at the current landfill
25 area, the area being filled with garbage,

1
2 working day as it was supposed to. The town
3 did not attempt to control the odor problem
4 at called for in the 1970 program. If the
5 town had, this landfill would have been
6 filled years ago.

7 What it did was extend the life of
8 the landfill by not following good
9 engineering practices. It cheated everyone,
10 including the environment.

11 All the town had to do was follow the
12 program. The idea of a sanitary landfill is
13 not so hard to grasp.

14 It is a method of disposing of the
15 refuse on land without creating nuisances or
16 health hazards to public health or safety by
17 utilizing the principles of engineering to
18 confine the refuse to the smallest practical
19 area, to reduce it to the smallest practical
20 volume, and to cover it with a layer of earth
21 at the conclusion of each day's operation or
22 at such more frequent intervals as may be
23 necessary.

24 So why didn't you do it this way?

25 The only answer can be money. So much money

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being put into the operation of our landfill would have caused you and all your predecessors your jobs had the public caught on.

Landfilling is not inexpensive or the least costly of all the methods available to get rid of waste.

You have created an inactive hazardous waste site of the landfill. If the taxpayers refuse to back you up on the inter-municipal agreement with Hempstead now, it will cost the Brookhaven taxpayer costs yet to be figured out. Mr. Vaz.

MR. VAZ: Mr. Heil, ladies and gentlemen, good evening. Mr. Governali just read lots of information on what the town hasn't done, and you come before us now with a new proposal and expect us to believe it.

I've examined the latest D.E.I.S.. On page 10 -- on Page 2-15 of the daily cover requirement, it's spelled out by your consultant engineers.

You ask for an exception from the Part 360 requirement for placing the daily

1
2 cover on areas to be filled with ash, thereby
3 minimizing use of valuable landfill space
4 without significant environmental impact.

5 At the top of the page, 2-15, the
6 town is asking for an exception in the daily
7 cover of the ash at the bottom of the page.
8 They have a apparently taken the axception
9 for granted.

10 According to the environmental impact
11 statement for the state -- New York State
12 Regional Ashfill of 1985, you have seen that
13 the state puts unusual emphasis on the daily
14 cover requirement.

15 Page S:11 states, "In addition, good
16 landfilling techniques will be followed at
17 the ashfill to minimize the potential for
18 odor production and emission."

19 These include, among others, deposit
20 of a daily cover over the ash. We require
21 you to do no less than the State of New York
22 had formally asked the New York State D.E.C.
23 to correct your documents.

24 We also have the New York State
25 D.E.C. to require the cover material to be

1
2 you to seriously consider your position.

3 Are you going to do what is right by
4 our people, or are you going to play
5 hardball?

6 You are dealing with fifty-one white
7 families, thirty-eight Spanish families and
8 twenty-four black families, a mixed bunch.

9 You are not -- you are creating a
10 situation in our development which has our
11 people totally incensed against you. Nothing
12 short of a buy-out or reasonable terms will
13 be acceptable to us.

14 The town has suggested to us that
15 perhaps a superfund might pay for a buy-out.
16 You gentlemen are responsible for this mess.

17 At a small surcharge to the garbage
18 collection tax, in five years you can have
19 enough money to buy the development out.

20 You could float a bond, selling it to
21 the big business interests that are being
22 served by this ashfill in our backyard.

23 It is time the local state senators
24 and assemblymen got off their butts and
25 investigate the abuses associated with this

1
2 landfill.

3 It was done with the Multi-town Solid
4 Waste Management Authority, who by the way
5 are dealing with the same big business
6 companies you are.

7 Gentlemen, the smell of the landfill
8 has been -- has reached your town hall. As
9 citizens of the great State of New York and
10 residents of the Town of Brookhaven, we ask
11 all interested parties to join in requesting
12 a full investigation of the Town of
13 Brookhaven as to how they have mismanaged the
14 landfill and to prevent this same -- and to
15 prevent this same management from operating a
16 toxic ash landfill. Gentlemen, we reject
17 your project. It shall not be in our
18 backyard.

19 In closing, the following are
20 questions we, the community and the people of
21 Brookhaven, need answers to.

22 Why is the town taking an exemption
23 to the daily cover requirement when good
24 landfilling techniques recommend it?

25 What will the cover material consist

1
2 of? How much leachate will penetrate the
3 liner based on the permeability factor
4 associated with that liner?

5 How much leachate collection capacity
6 will be available when and if a major storm
7 should hit this area and deposit an excessive
8 amount of rainfall?

9 How will you repair the leachate
10 collection system if the collection system
11 pipes under the landfill become clogged?
12 What methods will you use to water down the
13 ash during a prolonged dry spell?

14 You have polluted the land. You have
15 polluted under the land. Now you are
16 attempting to pollute the air above the land.
17 When is it going to stop?

18 MR. HEIL: What's the specifics on
19 that house that you mentioned about the
20 assessment. Do you have the house location?

21 MR. VAZ: Jim, I don't have the
22 specific numbers, but I will call you and get
23 you the number.

24 COMMISSIONER HEIL: Thank you.
25 Jenniefer Garcia. Good evening.

1
2 MS. GARCIA: Good evening. My name
3 is Jennifer Garcia. I have been living in
4 the shadows of the dump for over twelve
5 years.

6 I remember whne I was six years old
7 and first moved into this community, my
8 father had told me that this was going to
9 become a beautiful area with playgrounds and
10 a recreational facility.

11 As I got older and saw no
12 playgrounds, I asked my dad where it was.
13 Well, all he could answer was soon. That
14 soon never came.

15 I am now eighteen years old, have
16 graduated from high school and continuing to
17 meet my goals in college.

18 I have come forward tonight to
19 represent the younger generation of our
20 community.

21 I understand the law of playgrounds
22 and realize it's unsanitary to place it over
23 a ground that has been penetrated with toxic
24 substances.

25 Look, I have never been good with

1
2 reading premeditated speeches. You know, I
3 have three younger sisters, and what future
4 am I supposed to expect for them and all the
5 little kids around me?

6 You know, it's our community that you
7 are taking away from us. You know, by
8 expanding this landfill, it's garbage you are
9 placing in our hands.

10 They say -- Brookhaven's always
11 saying oh, you know, let's go and help, you
12 know, make this a cleaner place to live in a
13 better environment, when -- yet all we have
14 is -- soon we're going to be covered in
15 garbage, and it's not fair.

16 You know, when people ask me where do
17 you live, what do I have to tell them, I live
18 right next to the dump?

19 You know, soon I'm just going to say
20 just follow the odor. That's where it is.
21 You know, I mean, it's just unfair.

22 Put yourself in our shoes and see
23 what we smell, what we have to go through
24 everyday, you know, from having teary eyes,
25 being congested.

1
2 It's just not fair, and because you
3 don't live there, maybe you don't realize,
4 but we do.

5 And I started my speech with my -- I
6 started my speech and I'll end it with my
7 closing statement. We are far more important
8 than to be dumped away like garbage. Thank
9 you.

10 MR. GOVERNALI: In closing, we would
11 like at this time for all those people in the
12 room that oppose this landfill to please
13 stand up for a moment.

14 Please let the record show that all
15 seats that were filled, and the room is
16 filled, everyone has stood up. Good night,
17 gentlemen.

18 MR. HEIL: Good night. Walter Bundy?
19 Good evening.

20 MR. BUNDY: Good evening. My name is
21 Walter Bundy. I've been a resident for about
22 twenty years now.

23 We live down on South Country Road in
24 East Patchogue, and it has -- over the years
25 just has gotten worse and worse with the

1
2 condition of the dump.

3 It seems from what I've been hearing
4 tonight, it's the Town of Brookhaven doing
5 business as usual.

6 The seventy-eight acres planned on
7 being used was to be preserved as open space
8 for a buffer next to the homes, and I don't
9 know what gives the town the right to just
10 change things and make it now going to be
11 used for a dump.

12 That's all I can call it, a dump.
13 It's not a landfill. It's nothing but a
14 dump.

15 All of it going next to these homes
16 is totally unacceptable, and it's a very,
17 very bad health hazard, and the -- it's just
18 as I said. It's just the Town of Brookhaven
19 doing business as usual.

20 They don't give a damn about the
21 residents. It appears, according to a
22 leaflet that we received, that half of the
23 waste, four million tons of ash, comes from
24 Hempstead.

25 Now, it shouldn't have been taken in

1
2 the first place if the capacity of our
3 existing dump could not have handled or
4 required such an immediate expansion.

5 Hempstead, I hope, has been paying
6 for all of everything that is required to be
7 done at the existing landfill, and I hope
8 they're going to pay for the better part of
9 whatever has to be done to correct the
10 situation that we have in this town.

11 This should not come out of our
12 taxes. It should come out of the people that
13 you are allowing to dump crap into our town,
14 and it should come out of your salaries.

15 The town should look at alternatives
16 such as mining and recycling our existing
17 landfill and getting rid of what we have, and
18 stop taking other town's trash and ash.

19 All I can say is that the rubbish
20 should get no larger than it already is, and
21 I think it's about time that you as the Town
22 of Brookhaven start acting responsibly in
23 handling waste management.

24 The dump fees for residents are
25 getting out of hand. Construction debris,

1
2 you try to go over with a two by four. They
3 hit you for construction debris fees.

4 Well, I'm sorry. That's totally
5 unacceptable, and yet you have large carters
6 coming and dumping God knows what in that
7 landfill.

8 You know, in retrospect and just in
9 closing, as I said, the Town of Brookhaven is
10 doing business as usual, and it's very ironic
11 that land for McNamara is being considered
12 for this use.

13 The town has trashed our town by the
14 corruption that the Town of Brookhaven stands
15 for, and now they want to continue trashing
16 us for another eighteen years, and I'm sorry.

17 Every town resident should oppose
18 this expansion, and I agree we should
19 investigate the Town of Brookhaven.

20 COMMISSIONER HEIL: Charles Stephani?

21 MR. STEPHANI: Good evening. I
22 really didn't know which path to take
23 tonight, and I read this statement, oh, about
24 a month ago, actually ironically, and I just
25 said that the only way to consciously improve

1
2 the environment is to come from the heart,
3 and that's where I'm going to be coming from.
4 It may hurt, but sometimes it does.

5 I've been a teacher at Hampton Avenue
6 for twenty-three years. Over the past year
7 plus I've never seen more children out in the
8 playground involved with asthma attacks,
9 shortness of breath, et cetera, not to
10 mention that just again this morning, just
11 stepping out of my car, we get either no air,
12 no breeze or a slightly northeast wind, the
13 stench that is no more sure the hell is
14 there. It's disgusting, it really is.

15 If nothing else, the odor, but there
16 are a lot of other ramifications which you've
17 heard.

18 Environmentally, which I don't want
19 to get into, as has been discussed, as well
20 as the personal health issues.

21 What really perturbed me most is the
22 setup in nature of this hearing. I'm really
23 -- I admire, first of all, the strength and
24 courage of everyone who is here, because they
25 are all concerned citizens, and the only way

1
2 you're going to keep them concerned is to
3 start listening to them.

4 I'm appalled though at the way that
5 this hearing has been set up, monologue from
6 us to you and nothing from you to us.

7 Now, again, I am -- I am not an
8 expert at any of this, but I keep fairly well
9 involved.

10 I've attended hearings with Kessel
11 and Mr. Heil, yourself, at Hampton Avenue,
12 and there are tons of questions here that
13 people have and want to have answered, and
14 you are the most equipped to answer them, and
15 I don't understand why you don't want to.
16 Can you answer that question?

17 MR. HEIL: The town has put forth the
18 Environmental Impact Statement. The purpose
19 of this hearing is to hear issues perhaps
20 that haven't been addressed or people feel
21 are inadequately addressed or just to hear
22 the dialogue back.

23 It's not to get into essentially a
24 discussion about that on the formal structure
25 under the State Environmental Quality Review

1
2 Act.

3 Once again, if a group of residents
4 wants to, you know, have a dialogue, I'm
5 certainly willing to go attend a civic
6 meeting or -- and be there in a dialogue.

7 MR. STEPHANI: We are town -- we are
8 a township here, and we are represented as a
9 town, and we are here all collectively
10 together to find out certain things, and I
11 don't think that any one person -- I don't
12 want to personally write you a letter and ask
13 you my questions.

14 I have written letters to Mr. Lamura
15 and never got anything in return. Everybody
16 is here now, and to divide and conquer is a
17 very, very skillful method, but we're dealing
18 with children.

19 We're dealing with young adults.
20 We're dealing with children not even born yet
21 who are to live here in the future, and if
22 you don't start being sincere with us and
23 being open with us -- I'm not saying you're
24 not being sincere, but you're not being open,
25 and we need to know what's going on in your,

1
2 shall we say, scheme and thoughts, rather
3 than just hearing from us, and until that
4 happens, you know, we can just kiss this all
5 goodbye.

6 From what I understand this is the
7 only hearing; is this correct?

8 MR. HEIL: It will be your hearing
9 for the Environmental Impact tatement.

10 MR. STEPHANI: Then what follows from
11 here?

12 MR. HEIL: Permit application to the
13 State D.E.C., which may -- the state then may
14 hold a public hearing on the specific
15 technical aspects of the town's proposal.

16 MR. STEPHANI: So in other words
17 these people will not be heard anymore other
18 than tonight, and they can't even ask a
19 question?

20 MR. HEIL: They can respond in
21 writing up until December 4th and the -- and
22 it will be put forth in the environmental --

23 MR. STEPHANI: I responded in writing
24 and never gotten any answer.

25 MR. HEIL: Once again, if you -- when

1
2 you -- I don't know specifically what you,
3 you know, have written about, but the -- all
4 the questions and issues that are being
5 raised tonight and in the comment period will
6 be addressed in the final impact statement in
7 writing.

8 MR. STEPHANI: In writing?

9 MR. HEIL: Yes.

10 MR. STEPHANI: So this is it for us.
11 This is our last hurrah.

12 A VOICE: We'll have a demonstration.

13 MR. STEPHANI: That's what ends up
14 happening. If you want us to block Sunrise
15 Highway or do something to that effect that's
16 what we'll do.

17 A VOICE: We'll do it.

18 MR. STEPHANI: People here are
19 concerned. They're hurting. They are really
20 really truthful with you. They're not making
21 up stories here. This is real.

22 A VOICE: What is it going to take?

23 A VOICE: They don't care.

24 MR. HEIL: I understand. That's why
25 we're here listening and hopefully able to

1
2 respond.

3 MR. STEPHANI: My suggestion to
4 everyone out there, I don't know who is
5 willing to -- is somebody right now who wants
6 to take control of this ship, because as far
7 as, you know --

8 MR. HEIL: Mr. Stephani --

9 MR. STEPHANI: I'm sorry. We will --

10 MR. HEIL: We have a record to
11 maintain. You can certainly step out after
12 the hearing and certainly use the -- the
13 audience to whatever means you want, but I
14 would like to maintain the record. There are
15 other people following.

16 MR. STEPHANI: I understand that.
17 I'm using the audience, but I feel this is
18 what they want.

19 MR. HEIL: Okay. Hugo Giannotti,
20 please? Good evening.

21 MR. GIANNOTTI: Good evening, Jim.
22 My name is Hugo Giannotti. I live in East
23 Patchogue, and my office is on Station Road
24 in Bellport.

25 As I was driving to the meeting this

1
2 evening over Sunrise Highway, that seems to
3 be the strongest point of the odors that were
4 emanating from the landfill, and it seemed to
5 be -- it seemed to be at least -- on Station
6 Road it seemed to be that it was a little
7 more than an odor, because you could actually
8 taste it, and -- which would seem to imply
9 that there's a little more involved in just
10 the fumes coming out, that some of the odors
11 may be traveling on -- on very low micron
12 particles which may be coming off the
13 landfill.

14 But the -- the thing that I want to
15 address very briefly was that, of course,
16 this is our garbage.

17 Somehow it's not Jim's garbage. It's
18 our garbage, and Jim is responsible for
19 somehow dealing with this, but it's still our
20 problem.

21 But one of -- one of the problems
22 that I have is that the Town of Brookhaven is
23 the largest town in New York State.

24 It has four hundred ten thousand
25 people, and the concentration, however, of

1
2 the -- of the garbage is there, and the
3 landfill is in one small area.

4 And since it is our problem
5 fundamentally, I would imagine that this --
6 that this problem should at least -- at the
7 very least be distributed somehow among the
8 population of Brookhaven.

9 Of course we should do everything to
10 -- to reduce the odors and the leaching, et
11 cetera, et cetera, and Cell Number 4 was
12 presumably the pilot project, and I don't
13 think it's really our mission to open up Cell
14 Number 5 until all the problems of Cell
15 Number 4 have been resolved.

16 And once -- and since that is a pilot
17 project, if that's been resolved and there
18 are no further odors, then we can say with
19 assurance that Cell Number 5, whether it's
20 located here or in Port Jefferson or
21 wherever, that it will then be, of course,
22 rather a good state of the art cell.

23 So that the effluent coming from this
24 thing is -- of course it's concentrated in
25 this area, and until we somehow learn how to

1
2 distribute this, because there will always be
3 a residual effluent, residual problems, and
4 until that is distributed democratically, I
5 don't think we have really resolved the
6 problem. Thank you.

7 MR. HEIL: Thank you. Helen Pedigo.

8 MS. PEDIGO: My name is Helen Pedigo,
9 and I'll disclose that I am a licensed New
10 York State realtor, and I have a very short
11 statement. I think we're going to get a lot
12 of support from everyone behind me.

13 I'm really concerned why the town
14 would even consider enlarging the dump.
15 Brookhaven is now becoming a dumping ground
16 for other people's ash.

17 Granted, there is no easy situation
18 to help solving this problem, but there are
19 several factors which must be considered.

20 Number one is the health of the
21 surrounding areas, primarily Sundial and
22 South Village Drive.

23 There are days when the stench is
24 horrible. As a resident of a nearby Sid
25 Farber development which is less than one

1
2 mile from the dump, you cannot tell me that
3 what I'm smelling daily is good for my
4 health. If the wind is blowing the right way
5 you can smell that stink for miles .

6 Number two, some of the economic
7 factors. I think the town board should
8 consider how this will affect the value of
9 homes in all the surrounding areas.

10 I ask you, when you are showing a
11 house that I have for sale on Sundial Drive
12 -- excuse me. Sundial Lane, and a young
13 couple and I are breathing this horrible
14 odor, how do you overcome the objection of a
15 smell that is so nauseating that you can
16 taste it?

17 The homes there are selling in the
18 eighty thousand dollar price range and even
19 lower. I know. I am a realtor, and I am in
20 contract for a sale on one on Sundial Lane.

21 If you were a young couple today with
22 one child, would you purchase a home next to
23 a dump? Probably not.

24 My main complaint is personally I do
25 not like people dictating how much money will

1
2 go in and out of my pocket.

3 Since I live in the area you are
4 taking money out of my pocket by reducing the
5 value of my home.

6 You are taking money out of my pocket
7 by being a realtor not being able to make
8 sales in the area which I call home. Thank
9 you.

10 MR. HEIL: I have four young ladies,
11 Loredana, Renee, Linda and Holli.

12 UNIDENTIFIED SPEAKER: We are from
13 the Girl Scouts, 1404 and 1668. As a future
14 adult of this community we would like to let
15 Brookhaven Town know we are totally against
16 having the landfill expansion.

17 Even though we are from the
18 Manorville area, there are days when the odor
19 from the landfill can make us sick to our
20 stomachs.

21 UNIDENTIFIED SPEAKER: Our parents
22 brought us to the Town of Brookhaven because
23 of the clean open area.

24 We are taught in school that -- to
25 save our environment, and here we are

1
2 learning that you want to destroy it.

3 UNIDENTIFIED SPEAKERS: Save our air,
4 save our lives. Thank you.

5 MR. HEIL: Dr. Robert Sack?

6 DR. SACK: Mr. Heil, I'm an
7 immunologist. I study allergic reactions
8 basically of the eye.

9 You should know me. I tried to speak
10 to you several times. Over the past few
11 years I asked you specifically and people in
12 your office have people reported respiratory
13 problems, and the answer has always been no,
14 no, no, there are no health problems
15 associated with the dump.

16 We all know that isn't true, and I
17 think this audience ought to know that there
18 have been scientific studies published in the
19 past year in Science and other journals which
20 have definitively linked upper respiratory
21 problems with fumes from dumps, and there is
22 legal recourse in the form of a suit.

23 And that I think it's only fitting
24 that it's Mr. McNamara that the town
25 recognizes, and we ought to have a class

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action suit, with you as the major aim.

MR. HEIL: That completes the people that have asked to speak by submitting cards. Once again, the record remains open until December 4th for written comments. If you need any additional information you can contact my office.

I thank you for your interest and attention this evening, and the Final Environmental Impact Statement will be released sometime in December. Thank you very much.

MR. BUNDY: Excuse me. You're just saying that you're going to think about our comments.

What is preventing you as the commissioner of solid waste management of getting back together and telling us how you are addressing the comments before you issue your formal document?

What is preventing you from doing that as a responsible person to the community?

MR. HEIL: I -- my assumption is that

1
2 dialogue will continue in some form.

3 A VOICE: When? Same as our other
4 dialogues continue.

5 MR. HEIL: Thank you very much.

6 (Whereupon, at 8:40 p.m., the withing
7 hearing was concluded)

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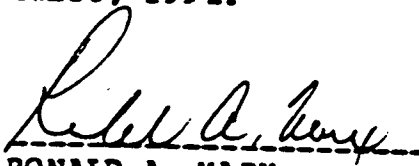
CERTIFICATE OF REPORTER

1
2
3
4 I, RONALD A. MARX, hereby certify that the
5 within Hearing was held before me on the 10th
6 day of November, 1992.

7 That the within transcript is a true
8 record of the within Hearing.

9 That I am not connected by blood or
10 marriage with any of the parties. I am not
11 interested directly or indirectly in the matter
12 in controversy, nor am I in the employ of any of
13 the counsel.

14 IN WITNESS WHEREOF, I have hereunto set my
15 hand this 13th day of November, 1992.

16
17 
18 RONALD A. MARX



The League Of Women Voters Of Brookhaven

Statement by The League of Women Voters of Brookhaven on The Proposed Landfill Expansion Project

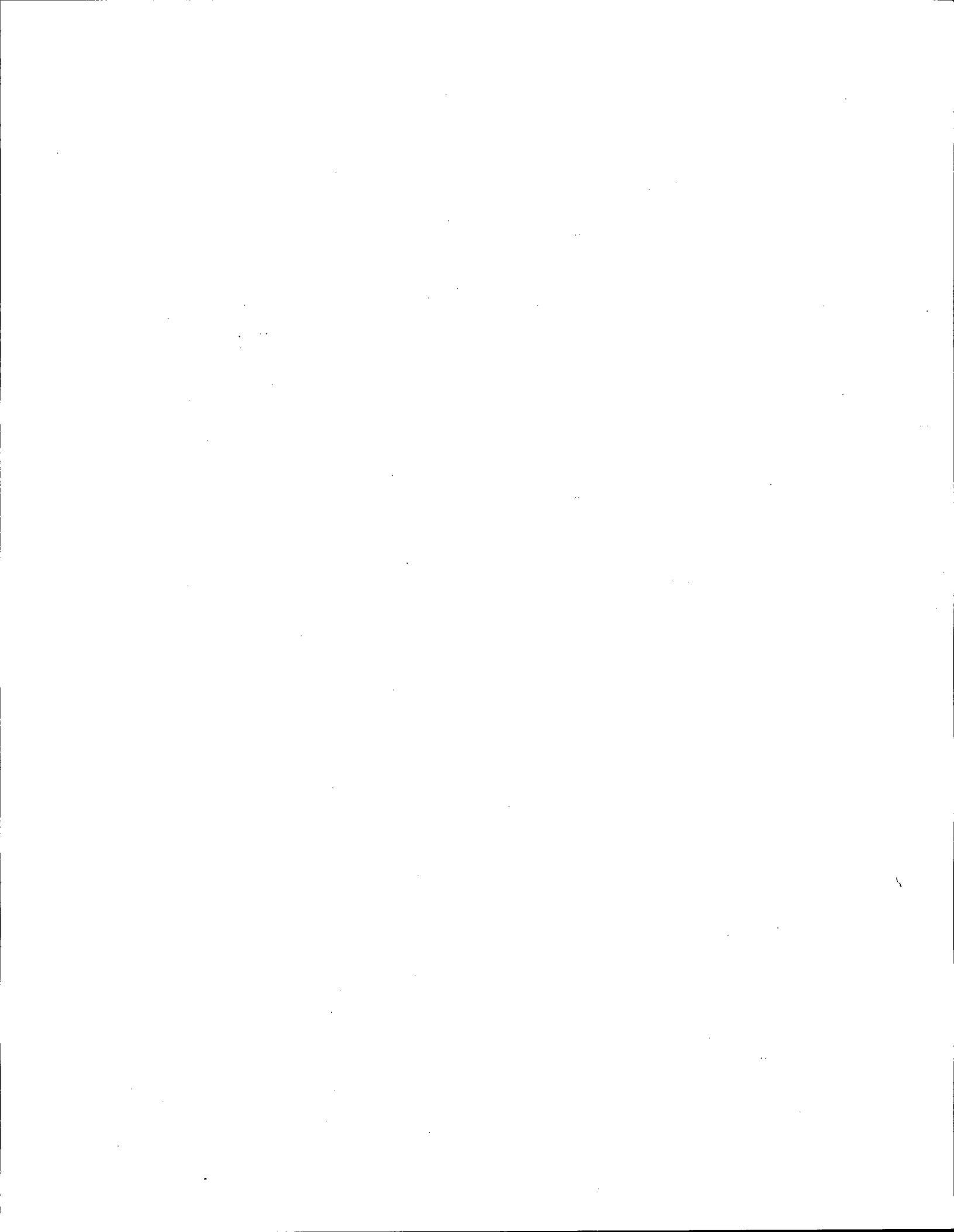
The League of Women Voters does not take a position on any subject before a thorough study of that subject. The County League has studied and taken a position on the municipal solid waste issue. The main thrust of our position is the familiar 3 R's: Reduction, Recycling, Reuse. In addition, we state that the preservation of groundwater quality in any MSW plan is of the greatest importance. In that context, we would like to submit the following comments on the DEIS for the proposed landfill expansion.

1. We compliment the Town for acknowledging the many problems associated with such a large project and citing the efforts they will make to mitigate these problems. However, we remain unconvinced that the elaborate liner system with the network of pipes for leachate collection will necessarily protect the groundwater. Nowhere do we find a clear statement of the procedures to be used if the testing of the leachate starts to indicate possibility of water pollution. Instead, the thought is expressed that since water "downgradient of the expansion" is already downgraded, further pollution is of no consequence. This is directly opposed to our concept of making every effort to protect water quality. Since the effects of any pollution will continue for years and since there is a stream, a river, and the Great South Bay in the path of the groundwater flow, any pollution is bound to reach these waters in time. We feel there should be more serious consideration given to this problem in the DEIS.
2. We are firmly committed to the reduction, recycle & reuse concept in handling municipal solid waste and feel these ideas should be more seriously explored in this document. Nowhere is the Town's excellent proposed "don't bag it" program mentioned. There are several pages devoted to the concept of a 13 year landfill instead of an 18 year one, but the former is dismissed as being more costly/ton. It is not clear that the TOTAL cost would be less. It is always hard to see that a smaller scaled down project will cost more than a larger more ambitious one. It is as though any new ideas in recycling, any advances in package reduction which the League has been active in supporting, are just summarily dismissed and not given serious consideration. These new waste reduction procedures could have significant impact on the life of the trash-for-ash deal with Hempstead, and thus on the scope of our landfill needs. A shorter smaller project should be given more in depth consideration than is apparent in the DEIS.
3. Our position on any issue includes, if relevant, the cost of a proposal. The stated cost per ton for landfilling in the expansion area is given as \$24.00 per ton. This seems an unrealistic figure if all of the extensive monitoring procedures presented in the document are carried out as stated. Also, since we believe current tipping fees at the existing landfill are \$60.00 per ton and handling waste at the MRF is estimated at \$49.00 per ton, the \$24.00 per ton is a very low figure. We believe more realistic cost analysis should be presented.

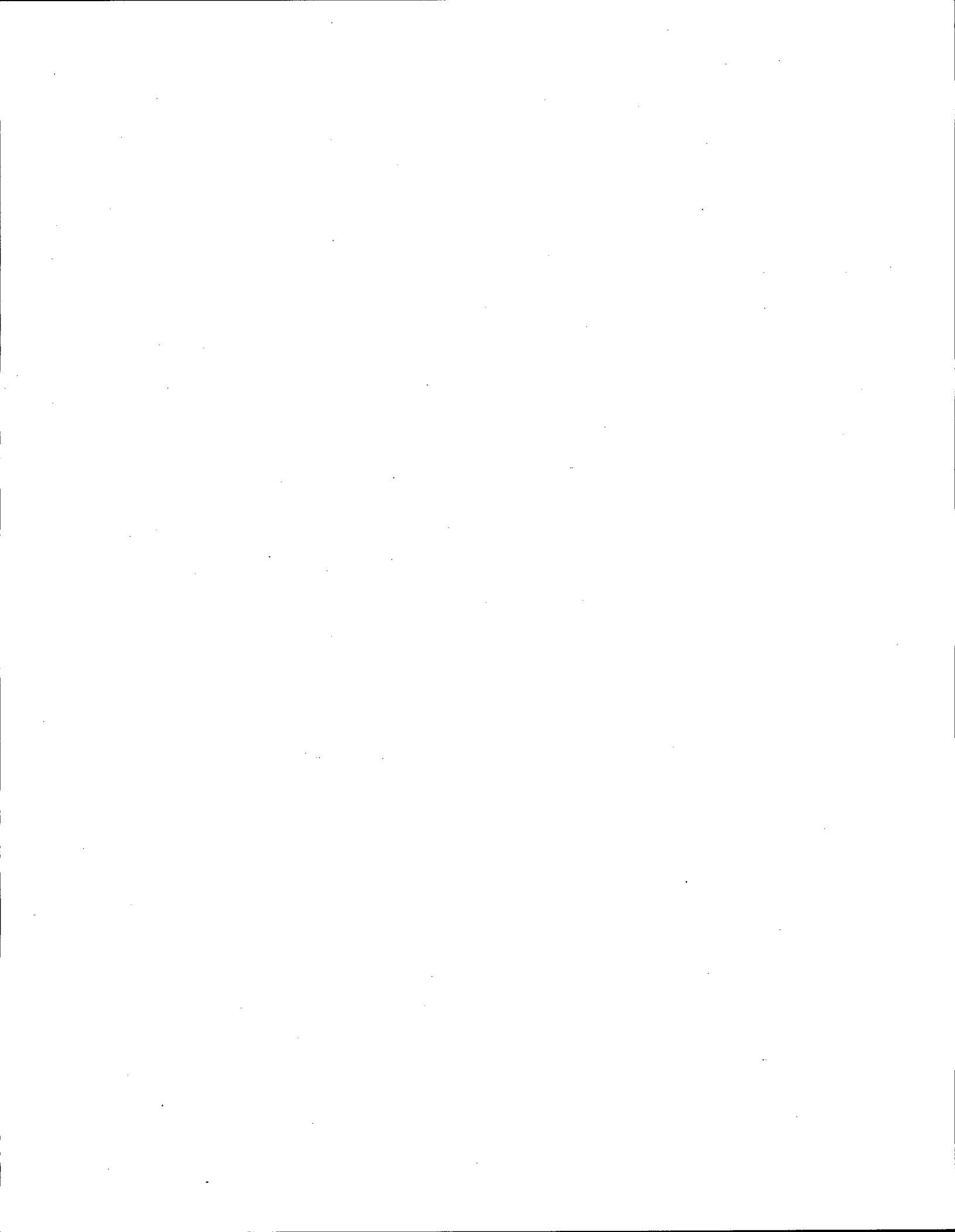


The League Of Women Voters Of Brookhaven

4. One final comment is in order. As stated in the beginning, the League of Women Voters operates by studying issues and reaching a position through consensus. The huge and highly technical three volumes which comprise this DEIS make it very difficult for the average person to make any informed comments on it. This system of public input to such an important project is flawed when such massive amounts of data must be assimilated in order to make effective comments.



**APPENDIX 2
WRITTEN COMMENTS**



NOVEMBER 5, 1992

JAMES HEIL
LANDFILL COMMISSIONER

DEAR SIR:

AS A RESIDENT OF BROOKHAVEN TOWN
& WISH TO VOICE MY OPINION AGAINST
PROPOSED LANDFILL EXPANSION. I DO
NOT BELIEVE IT WILL SAVE MONEY
AND I BELIEVE IT IS BEYOND THE
TOWN'S NEEDS.

THANK YOU.

Sincerely

Richard Youngman

WILLIAM HUNGWIC
11 HENRY ST
GATE MARCH NJ 07834

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN
1992 NOV - 9 AM 10:20

Nov 9, 1992

To: James Heil
Commissioner of Solid Waste Mngmt.
Town of Brookhaven
3233 Rte 112
Medford, NY. 11763

Re: Cell 5 Proposed Expansion

Dear Mr. Heil,

I most strongly object
to the Cell 5 proposed expansion.
In an area which is highly
populated, I cannot understand
how you could even think
of subjecting this area to
even more landfill problems.
How can you justify this?

Adrienne Kanowitz
12 meadow Ave
Medford, N.Y. 11763

18 Old Barto Rd.
Brookhaven, N.Y. 11719
Nov. 10, 1992

Mr. James Heil
Waste Management ?
Brookhaven, N.Y.

Dear Mr. Heil.

How does one describe the disappointment of lost faith? When one feels elected corrupt officials just ram-rod a once beautiful community with lies and bad faith. You owe the community of Brookhave Hamlet and surrounding neighborhoods big time! We have suffered the mismanagement of the "Brookhaven Landfill" for many years now. You ha ruined the Hamilton School, real estste values, and our quality of. li How can you ask us, the residents of these communities to live with more filth from Cell 5, when you can't even manage Cell 4 ?

I cannot support your proposal for the development of Cell 5. Please record my opposition.

Yours truly.

Ms. Sally Pezza
Mr. Rich Suatt
18 Old Barto Rd.
- Brookhaven, N. Y.
11719



November 11, 1992

James Heil, Commissioner
 Department of Waste Management
 Town of Brookhaven
 3233 Route 112
 Medford, NY 11763

Dear Mr. Heil:

Please consider this letter as a supplement to my comments submitted yesterday on the Draft Environmental Impact Statement (DEIS) for the proposed expansion of Cell 5 of the Town of Brookhaven landfill. I have also attached a letter sent to Supervisor LaMura regarding his and the Town Board's lack of attendance at the hearings (with the exception of Councilman Macchia).

In particular, I want to address an issue that I only briefly mentioned in my written statement and oral comments: the inadequate cost estimates of the proposed expansion included in the DEIS.

It appears that the cost assessment presented in the DEIS (pp. 8-3 to 8-4, and Appendix 16) is sorely deficient, at worst, and confusing and possibly misleading, at best. In particular, the cost estimates for Cell 5 appear only to include construction costs, and to neglect monitoring costs during the life of the proposed landfill and during the 30-year post closure monitoring period.

The DEIS lists some of these additional costs, including salaries, equipment, leachate transportation and treatment, access road maintenance, and maintenance of monitoring equipment (p. 8-3). The DEIS further states that "[t]he total development price for the Landfill Expansion Area project can be estimated based upon a per-acre construction cost, as well as the additional cost for the ancillary facilities and activities . . . as described above." (emphasis added; p. 8-3) Yet the DEIS never makes clear if these extra costs are actually included in the cost estimates in Section 8.3 or in Appendix 16.

Nor does the DEIS include a discussion of the possible impacts of additional landfill construction, operation, and monitoring regulations. As I am sure you know, DEC is now redrafting its Part 360 solid waste management regulations to conform to federal landfill requirements, and to incorporate myriad other changes recommended by DEC staff and outside commenters. The final regulations have not been prepared; it is entirely possible that much more stringent provisions could be adopted that would substantially increase the costs of Cell 5. The DEIS would not be complete or adequate without a full discussion of the impact of these revised regulations.

In addition, section 120-aa of New York State General Municipal Law requires each municipality in New York to adopt a mandatory source separation ordinance for materials for which economic markets exist. The DEC has prepared guidelines for communities to identify such "economic markets" that "will enable all municipalities in New York State to evaluate the costs of

Page 2

solid waste management in a similar manner." The full costs of the proposed Cell 5 must be examined, in addition to current landfill operation, closure, and monitoring costs, in order for Brookhaven officials to accurately undertake the "economic markets" analysis required by §120-aa if any changes in the Town's recycling program are proposed. Therefore, the DEIS must be revised to include such a true, comprehensive cost accounting for the proposed Cell 5.

Thank you for including these additional comments in the record.

Sincerely,



Steven Romalewski
Long Island Coordinator

* Nosenchuck, N. E. (1992). "Division Technical and Administrative Guidance Memorandum: Avoided Costs in Solid Waste." SW-92-4005. August 24, 1992.

Monday, November 9, 19

Dear "Fellow Hamptonites,"

This is an informal survey. Do you suspect that working next to the landfill has started or increased allergies, headaches, etc.? If so, please put your name and indicate your symptoms. Thank-you for your help. Claire

Claire Good - increased allergies - on daily promastin medication to include nasal spray - eyes are always irritated - before & took "over the counter" medication a few times a year

Paul Schaffer - allergies - digestive - on medication - contact symptoms - contact with ENT specialist

Paul Lane - chronic - nasal congestion and this past year - Echinacea and lavender - irritates - cough - but -

Lillian Brigid - Headaches - joint pain

Hanna Craig - severe sinusitis, bronchitis
shortness of breath, hoarse
throat

Sale De Jesus - head pain, sinus

Hanna Cabrer - Headaches

~~Maryann Rodriguez - head pain~~
~~shortness of breath, hoarse~~
~~throat~~
R. Lujan

Clara Sanchez - dizziness, headache
shortness of breath, hoarse
throat
headache, dizziness, shortness
of breath, hoarse throat
headache, dizziness, shortness
of breath, hoarse throat
headache, dizziness, shortness
of breath, hoarse throat

Little Howard Increased sinus
headaches ~~diagnosed with~~ some
blood stream

Robert F. Holland - amenable to wear
my contact lenses for most of the
day. I also develop frequent headaches
during the work

Fanny Nixon - On the first day
of school I developed tightness in
my chest which evolved into a
terrible allergy-related cough which
lasted 2 1/2 weeks. I have constant
headaches and chronic rhinitis which
does not subside

Robert F. Holland - amenable to wear
my contact lenses for most of the
day. I also develop frequent headaches
during the work

Robert F. Holland - amenable to wear
my contact lenses for most of the
day. I also develop frequent headaches
during the work

Ann Rosen - chronic post-nasal drip, loss of sense of smell - congestion is frequently - eyes water
On medication for allergies

Lisa Kelly - constant headaches and ~~some~~ dizziness

(works in
2 buildings)
Val Gilliam - allergies are much worse in these buildings. Eyes are irritated and constant sneezing

Barbara ~~Rosen~~ Frequent head aches, sore throat, and respiratory problems. I have had pneumonia twice and missed 3 weeks of school the second time. I feel nauseous on the days when the offensive odors are most noticeable.

Larissa Pinto - headaches, nausea, frequent allergy attacks. Constant post-nasal drip

~~Kevin~~
Lance ~~Leader~~

Josephine Turner - Constant congestion
severe headaches - on prescription
medication - each year gets worse
This is your tree.

Nayla - headaches and burning eyes -

Caroline - increased my allergies
greatly; itchy eyes; stuffiness;
sore throat.

Sharon 24, 2011 - 2011 10/1
Brenda Sharp - constant congestion, cough
and sore throat

Brenda Sharp: Headaches & allergies
- was had began one week after
- I remember when she opened

Sharon - constant congestion, but
- I remember when she opened

Sharon - constant congestion

Suzanne - Headaches and burning eyes
- I remember when she opened

Sharon - constant congestion

10/10/92 Harl Williams - I have developed
nasal congestion, runny eyes, and
sneezing. I am presently on histin
for allergies. I no longer can wear
my contact lenses. I also have
poor ~~poor~~ nasal drip. Headaches
will.

11/10/92 Christine A. Fuess - Headaches occur
at least three or four days out of
our five days of school. Blurred
vision and sinus irritation. All
these symptoms I usually do not
experience unless I am at work.

Christine Matlock - Developed allergies.
~~The allergies~~ have caused temporary
hearing loss & feel nauseous
on days when the dump smell

Cynthia Goldstein - Her childhood
allergies have redeveloped with a
vengeance.

Carole Ann - Bronchial Asthma has interfered
with breathing.

Vicki Schachter - increased vertigo to allergists
anasthema medication

Mary Anne - headaches, loss of voice

Sharon Quail Headaches and runny nose

Jean Berone

Headaches, RUNN CONSTANT POST-NASAL
drip, also - IRRITATION of throat
+ loss of voice at times -

Jane Johnson

Frequent headaches, itchy eyes and
post-nasal drip. Headaches began last
year and have persisted into this year
as present.



STATE OF NEW YORK
EXECUTIVE DEPARTMENT
STATE CONSUMER PROTECTION BOARD

RICHARD M. KESSEL
CHAIR AND EXECUTIVE DIRECTOR
December 23, 1992

REPLY TO:
99 WASHINGTON AVENUE
ALBANY, NEW YORK 12210-2881
(518) 474-3514
FAX (518) 474-2474

REPLY TO:
250 BROADWAY, 17th FLOOR
NEW YORK, NEW YORK 10007-2591
(212) 417-4482
FAX (212) 417-4808

Mark R. Chassin, M.D.
Commissioner
Department of Health
Empire State Plaza
Corning Tower
Albany, NY 12237

Dear Dr. Chassin:

I am enclosing materials submitted to me by concerned citizens who live near or attend the Brookhaven Town Landfill on Long Island. These citizens conducted a survey of students who attend school nearby. The survey tried to discern any negative impacts from odor problems emanating from the Brookhaven Town Landfill.

When the survey was first read to me at a meeting last week with Brookhaven residents, I was quite surprised at the findings. As Governor Cuomo's Ombudsman to the Brookhaven Landfill, I would like to request that the State Health Department determine whether or not children who attend the Hampton Avenue School are having their health negatively affected from odors emanating from the Town Landfill. I think we need to give these people some assurances that their children are safe.

In the meantime, I am working with the Town and the Department of Environmental Conservation to ensure that the odors are reduced and eventually eliminated. We are making progress, but more work must be done.

Thank you for your anticipated cooperation.

Sincerely,


Richard M. Kessel

njg



cc: Supervisor John LaMura
Commissioner James Heil
Ray Cowen
Tony Cava
Elizabeth Gundlach

156

Grade	Returned	Positive	Complaint	Returned	Positive	Complaint	Total
4 th	36	24	12	4	15	0	5
5 th	44	26	19	5	12	4	7
6 th	5	1	2	1	1	0	0
Total	85	51	33	10	28	4	12

no. of returned responses from 4th grade - 94
 no. of positive answers to any complaint - 65 69%

no. of returned responses from 5th grade 116
 no. of positive answers to any complaint 79 68%

no. of returned responses with no grade
 stated or a grade other than 4th or 5th 10
 no. of positive answers to any complaint 9 90%

no significant difference between teams.

Dec. 16. : 21 more responses have been received.
 The percentages remain more or less the same.

Hampton Ave. School - week of 12/1/92

DEC 11, 1992

We asked the question: Has your child experienced any of the following since coming to Hampton Ave. School? Headaches, nausea, eye irritation, allergies, asthma.

number of students enrolled at Hampton	756	
number of returned responses	220	29%
number of returned responses with a positive answer	153	70%
number of positive answers to the following complaint:		
Headaches	123	56%
Eye irritation	85	39%
Nausea	51	23%
Development of Allergies	33	15%
Development of Asthma	10	5%
Increase in Allergies	28	13%
number of returned responses with 2 or more complaints	96	43%
number of positive answers to a decrease in allergies	4	1.8%

There was no significant difference between grades.

% of returned responses with complaints from 4th grade 87%

% of returned responses with complaints from 5th grade 68%

Headaches were the most common complaint.

91 responded to headache frequency question.

of these 91 children who have developed headaches since coming to Hampton Ave. School: 54 (59%) get headaches often
 21 (23%) get headaches sometimes (once a week almost weekly)
 16 (18%) get headaches occasionally.

definition of often: includes terms such as: daily, almost daily, all the time, constantly, several times/week, very often, weeks at a time, returning from school, very frequently, often, every other day, every few days, 2-3 times/week, alot, frequently, more than normal, several times/week.

If 220 responses are representative of the total population of Hampton Ave. School then: 70% the children have developed one or more of the above ailments.

56% of the children will have a headache on any given day. 23% will be nauseous; 38% will have eye irritation. 15% have developed allergies.

**BROOKHAVEN CITIZENS'
SOLID WASTE ALTERNATIVES COALITION
PO BOX 179
BROOKHAVEN, NEW YORK 11719**

November 27, 1992

Mr. James Heil, Commissioner
Department of Waste Management
Town of Brookhaven
3233 Rte. 112
Brookhaven, New York 11763

CERTIFIED MAIL # P332-110-570
Re: Cell 5 Public Hearing

Dear Jim:

We are pleased to submit the attached written commentary on the Cell 5 DEIS as drafted by the Board of Directors of the Brookhaven Citizens' Solid Waste Alternatives Coalition.

Although three directors of SWAC spoke at the Public Hearing of November 10, 1992, because of time limitations, they were unable to cover all the pertinent points contained in our written statement. We therefore request that the attached statement be included in the hearing record in its entirety.

The statement is divided into seven major topics:

- Siting
- Landfill Alternatives
- Cell 5 Capacity
- Monitoring Operations
- Ground Water Protection
- Host Fees
- Costs

In each of these sections, we discuss what we believe are deficiencies in the DEIS which must be addressed. In doing so, however, we wish to stress that we are in no way giving tacit approval to proceeding with Cell 5. SWAC remains convinced that the acceptance of incinerator ash at the Brookhaven landfill is a short-sighted strategy with severe consequences to the physical and financial welfare of the nearby communities and with disastrous long-term financial consequences to all taxpaying residents of the Town of Brookhaven.

Sincerely,

Nanette Essel

Nanette Essel, Co-Chairman

Encl: Statement and Exhibits
cc: Ray Cowan, DEC

BROOKHAVEN CITIZENS' SOLID WASTE ALTERNATIVES COALITION

Written Commentary on the Cell 5
Draft Environmental Impact Statement
Submitted by the Town of Brookhaven
For Public Comment By December 4, 1992

Our review of the DEIS has raised a series of basic, underlying issues about the adequacy of the Town's Solid Waste Management Plan (SWMP), the location, scope, operations and costs of Cell 5 and the Town's continued heavy reliance on landfilling well into the future.

SITING: The Town's Site Analysis Plan was initially completed in 1989, prior to the time much of the acreage on which Cell 5 is proposed was owned by the Town. This acreage was "gifted" to the Town by John MacNamara in exchange for high density granted him for his proposed Regency Oaks Subdivision on the northside of Woodside Ave.

On pp. 209-210 of the June 13, 1988, Town Planning Board Meeting minutes, Mr. Maniello, Land Design Consultant on the Regency Oaks development for the applicant, John McNamara, states: As Mr. Holt has indicated, the proposal called for the development of just the northern side of Woodside Avenue between Woodside and Horseblock Road, a total of 118 acres approximately, 795 units broken down into four separate and distinct villages...We are talking in terms of approximately 8.7 dwelling units to the acre, which is a fairly dense development. However, when you add up all the acreage on the southern portion as well as the green space left on the northern portion, we are talking in terms of 200 acres of the entire 240 acres that would be left in a green or a natural state." (emphasis added).

A green or natural state does not mean a 230 ft. high ashfill, 500 ft. from the Horizon Village residential development. We are sure the residents of the development would prefer residential development to an ashfill.

On pp. 212-213 of the Planning Board minutes of June 13, 1988 Mrs. Petersen asked of Mr. Holt, "125 acres you are giving away, is that covenanted to remain forever natural?" Mr. Holt: "The Town. I can't remember. Phil, can you remember? We are giving it to the Town." Mr. Sanderman: "It is to be dedicated to the Town for general municipal purposes. It will never be developed but the Town does not take property nor buy any developmental entity in the State that is subject to a covenant. So when we take it, it is free and clear of any covenants, but I believe it is the intention to leave it open and natural as a buffer area."

initiatives and and a Supplement issued to the DEIS to reflect these revisions.

SWAC has advocated such alternatives to landfilling and incineration for some time. We are attaching as Exhibit II, our position paper of July 30, 1992, containing our ten point list of recommendations for amending the Town's SWMP prior to approval by the NYS Department of Environmental Conservation. The position paper was mailed to Town and NYSDEC regional officials at the time of issuance.

CELL 5 CAPACITY: A 1,250 ton daily capacity over an 18-yr. period suggests that the Town is disposed to extend the IMA with Hempstead over its full, 18-yr. term. This would be unfortunate since maximizing ways of reducing the waste stream and other recycling and composting initiatives, we believe, could put the Town in a position to terminate the Hempstead IMA after its initial 8-yr. term. Reliance on the IMA will discourage maximization of the State's solid waste priority initiatives and lead to incurring capital costs now for an oversized Cell 5 substantially in excess of our foreseeable needs.

MONITORING OPERATIONS: The DEIS acknowledges many adverse effects of the Cell 5 expansion. It discusses leachate generation, drainage problems, soil erosion, groundwater pollution, air pollution, noise, gas generation, and odors. It then states in broad generalities how all of these problems would be controlled or mitigated. Thus, it would seem there should be no problems with Cell 5. But it is hard to envision that the Town could effectively implement and enforce all the procedural safeguards the DEIS proposes, to solve the environmental problems of Cell 5. The safeguards include:

Waste Stream Monitoring: The Deis states that each truck load will be examined at the scale house for undesirable material. It is obvious that little can be seen at this point. At the working face, it continues, the material will be examined as it is unloaded, and inspected by the equipment operators as it is spread. Considering the amount of waste coming in, how effective will this be in keeping harmful substances out of landfill?

Surface Water Drainage: The DEIS indicates proper sloping of the landfill, diversion channels and perimeter drainage will keep all surface water away from the waste material. Considering past problems with the existing landfill requiring regrading of most slopes, how will Cell 5 be different? Do engineering-based design and operational guidelines exist to insure that past problems will not be repeated with Cell 5? If so, will they be carried out?

HAZARDOUS WASTE: To quote from the DEIS, "in general hazardous and toxic waste is not permitted to be burned at

assurance that Cell 5 will not affect our sole source aquifer is required before proceeding with its construction.

The DEIS advises that the ground water flow is in a southeasterly direction from Cell 5. The Suffolk County Water Authority's Station Road waterfield, while northwest of Cell 5, is nonetheless less than $\frac{1}{2}$ mile away. The concentrated weight of an ashfill, covering an expanse of 56 acres and 230 ft. high will surely affect the hydrology of this area, especially when water is being drawn from the waterfield wells. Proposed monitoring and quarterly testing to determine whether Cell 5 is contaminating the aquifer is not reassuring. Again, we are talking about Long Island's sole source aquifer. We cannot risk contaminating the island's sole source of drinking water.

WATER AND AIR TESTING: The DEIS indicates that ground water tests will be made quarterly. We question whether this frequency will be adequate, given the proximity to the SCWA waterfield. We believe that the tests should be conducted by independent testing labs, and that test results be readily available for public scrutiny.

The DEIS is deficient in not providing for air testing for both gas emissions and fugitive dust and must be provided for. Ash from Hempstead's incinerator will be stockpiled here some 230 ft. in the air. Since pre-sorting of trash is not performed at Hempstead prior to incineration, ash should not be "air-piled" here. If it is done, then stringent ongoing air testing at the landfill site and at strategic locations in the local communities is important to safeguard local residents.

A supplement to the DEIS is required to address air testing and to augment the water testing proposal.

HOST FEES: The DEIS cites potential impacts of Cell 5, on ground water, air quality, odors, traffic, visual aesthetics, etc., and delineates the various means by which the Town plans to mitigate these impacts. We are told that state of the art double liners, gas collection systems, etc. will preclude any significant impact on the surrounding communities, and that extensive screening and monitoring procedures will be followed to assure this will be the case. But twenty years ago, we were told the original landfill was state-of-the-art too, but today, the ground water under the Hamlet of Brookhaven has been contaminated, a leachate plume is heading for the Great South Bay, the air has been fouled by landfill gases, and residents have had to endure noxious odors (and still are), and have had to observe the looming 215 ft. existing landfill from their roadways, the bay and their beaches.

An article in the January, 1992, issue of Bio Cycle Journal of Waste REcycling (see Exhibit 3) describes how major disposal companies like Browning Ferris frequently pay local communities

of Cell 5? It surely has not considered the staffing and attendant costs of the monitoring activities promised in the DEIS. Has it added the capital and operating costs involved in the 22 acres of ancillary facilities? Has it allocated to Cell 5, its portion of the capital and maintenance costs of the existing roadways and facilities shared by all operations at the landfill site? Has there been any consideration of "host fees" in the cost estimate?

And what will it cost Brokhaven taxpayers if under the new White House leadership, the Environmental Protection Agency reclassifies incinerator ash as hazardous waste.

We believe the DEIS is seriously deficient in not providing a thorough, detailed analysis of what Cell 5 will cost the Town's taxpayers. The Town's Commissioner of Waste Management may be able to tell the press with a straight face that Cell 5 will save \$20 million annually, and garner headlines to that effect, but it is most unlikely, judging from the DEIS cost data, whether he has any straight cost data on Cell 5 which allows for a factual comparison to other alternatives. Therein, lies the real problem. The Town cannot adhere to the State's directive that municipalities assess whether they are choosing the most cost-effective means of handling their solid waste streams, without first having a comprehensive cost analysis of what Cell 5 as presented in this DEIS will really cost.

Until this is done, and a supplement issued to the DEIS, the present DEIS should be put on hold.

-end-

JUNE 13, 1988

1
2 It will be strictly a cost to the
3 condominium owners. We have met with
4 the Brookhaven Fire Department months
5 ago. They had serious questions and
6 we have answered all of these questions.
7 I would like, just for edification,
8 Mr. Maniello will show what we plan to
9 dedicate to the Town. Bob, would you
10 show the south side of Woodside, 124
11 acres. We have an agreement to tie into
12 Twelve Pines Sewer District. We are
13 ready, willing and able to answer any
14 questions. The professionals are
15 behind me and again, I hope I didn't
16 inconvenience the board, Mr. Sullivan,
17 by my going to dinner with my group.
18 Bob, could you explain the concept that
19 has been agreed to as to the 795 units.

20 MR. MANIELLO: Yes, Mr. Chairman,
21 members of the board. As Mr. Holt
22 has indicated, the proposal called for
23 the development of just the northern side
24 of Woodside Avenue between Woodside
25 Avenue and Horseblock Road, a total of 118

STANDARD CO., BAYONNE, N.J. 07002 FORM 140

EXH I
P3/5

JUNE 13, 1988

211

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to have any questions from the audience or from your board.

MRS. PETERSEN: Mr. Holt, would it be possible with the layout you have now to increase the buffer on the industrial side? We do have an industrial plan that is in now in the process.

MR. HOLT: Is that on the west side?

MRS. PETERSEN: Yes.

MR. HOLT: That is on the Walker side. Well, it is extremely tight, Linda. We would increase whatever we could, but I think Mr. Maniello said to me a few seconds ago that it is very tight.

MRS. PETERSEN: I know, it looks tight.

MR. HOLT: That is because of giving away almost 125 acres.

MRS. PETERSEN: 125 acres you are giving away, is that covenanted to remain forever natural?

1/2/87

PENNSA CO., STATEMENT, N.J. 07002 FORM 700

Lower adjacent from Woodside Estates.

The stench in the air is enough to drive us

all from our homes on numerous occasions

I'm sure that you are aware that the

school districts have logged complaints

about the headaches, nausea and respiratory

distress of students and faculty at the

South Country Schools. In the last few years

the number of diagnosed asthmatics has

dramatically increased in this area, my own

son can no longer function without at

least twice daily nebulizer treatments

so that he can breathe; yet when we are

away on vacation - out of the area, his

breathing improves dramatically.

Our water here is orange, overburned

by the amount of facilities and additional

homes allowed to hook-up to our sewage

systems. The land fill is enormous, and the cells

are not set up according to original proposals.

I am against using our area alone as the

dumping grounds of Brookhaven Town. If there are

no alternate ways to handle the garbage/ash

(as I believe there could be), find someone and

someplace else to dump on. We've had more than enough!

Signed: A More Than Concerned Taxpayer + Homeowner - Rita Miller
R.N.

RECEIVED
TOWN OF BROOKHAVEN
BROOKHAVEN
ENVIRONMENTAL
DEPARTMENT
BROOKHAVEN
VILLAGE ASSOCIATION, INC.
7, BROOKHAVEN, NEW YORK 11719

1992 DEC -3 AM 11: 52

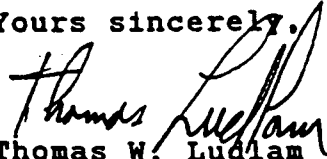
Heil, Commissioner
of Waste Management
of Brookhaven
Rte. 112
Brookhaven, N.Y. 11763

Dec. 1, 1992

Dear Mr. Heil,

Enclosed is a statement by the Brookhaven Village Association regarding the DEIS for the Cell 5 expansion of the landfill. This is the written copy of comments I delivered orally at the November 10 hearing.

Yours sincerely,


Thomas W. Ludlam
President

Comments on the
Draft Environmental Impact Statement
Town Of Brookhaven Landfill Expansion

Thomas W. Ludlam
Brookhaven Village Association
Nov. 10, 1992

Residents of Brookhaven Hamlet are very much concerned by the expansion of the landfill far beyond its original scope, by its present impact on our local environment, and by the evident threat of much greater impact in the future. Thus we have studied the DEIS with some care, and I present here our most urgent comments.

I. Contamination of Water Resources

The contamination of groundwater in residential areas southeast of the present landfill is well documented. The leachate plume that is advancing into Brookhaven Hamlet is a direct result of leakage through the liners in the existing cells of the landfill. There is a real possibility that contamination from the landfill will find its way into the Magothy aquifer-- a major source of public drinking water for Long Island. The Suffolk County Water Authority's Station Road well field, which pumps from the Magothy, lies just 3000 feet to the west of the proposed Cell 5. We have questioned the safety of these wells should the Magothy be contaminated by the landfill and, further, whether this pumping can enhance local underground flow patterns which direct surface water toward the Magothy.

We are pleased to see that the Town has responded to N.Y. State requirements by commissioning an extensive hydrogeologic study, including the installation of a number of new monitoring wells near the landfill site. Nonetheless we find the DEIS deficient on three important issues:

1. The document presents no quantitative data or analysis to show that the landfill is not in the deepflow recharge zone for the Magothy aquifer.
2. The pumping tests carried out by Leggette, Brashears & Graham, Inc. at the SCWA well field included only wells which pump from the upper glacial aquifer. Thus they do not address the consequences of high-volume pumping from the Magothy in close proximity to the landfill.
3. The DEIS does not address the mitigation of the existing plume of groundwater contamination from the landfill, and its continued development if leachate should escape from the new Cell 5. We find it unacceptable that the DEIS cites the existing groundwater contamination from the landfill as a mitigating factor in weighing the potential impact of Cell 5.

II. Project Scope

We agree with many other civic organizations and environmentalists who argue that the total capacity planned for Cell 5 is far larger than our Town requires, or that prudent planning would call for. The technologies for dealing with solid waste, as well as the very nature of solid waste is changing in ways that are hard to predict. The coming decade, like the past, is bound to bring significant advances in the way our society deals with reduction and recycling of waste.

The DEIS states, arguing for an 18 year capacity, that "an additional cost and risk with (a smaller Cell 5) is that another facility would need to be found five years earlier." We think this is just backwards. We believe that the problem with this plan is that it postpones until ten years into the next century the point at which the Town will be able to respond to the rapidly changing trends in waste management.

Specifically, we think that locking into a full 18 years of the Intermunicipal Agreement with Hempstead, with an overscoped and under-costed landfill, is an economic as well as an environmental mistake.

III. Management

This project is a large, sophisticated undertaking. The DEIS does not present a plan by which the Town intends to manage this undertaking, and gain control over all the many eventualities which can lead to environmental and economic impacts.

In the past, liners have failed, leachate collection systems have failed, the gas flaring system has failed, environmental monitoring has been woefully inadequate. The DEIS addresses these kinds of issues, and presents engineering responses. But how is it all to be managed? Who is responsible for each phase? What staff is necessary? What special qualifications and manpower are required? How are the project's costs, progress, and environmental test results to be monitored and reported during construction and operation?

The DEIS itself was not prepared by the Town, but was prepared for the Town by a firm of engineering consultants. It is the Town's responsibility to follow through on these plans, and we cannot properly assess the potential for future environmental impact until we have a detailed management and staffing plan from the Town.



RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 DEC -4 PM 2:09

SUFFOLK COUNTY WATER AUTHORITY

Edward J. Rosavitch, P.E.
Chief Engineer

Mailing Address - P.O. Box 38, Oakdale, NY 11769-0901
(516) 563-0202
Fax No.: (516) 589-5277

December 4, 1992

James H. Heil, P.E.
Commissioner of Waste Management
Town of Brookhaven
3233 Route 112
Medford, New York 11763

Re: Draft Environmental Impact Statement
for the Town of Brookhaven Landfill Expansion

Dear Mr. Heil:

The Suffolk County Water Authority has reviewed the above mentioned document and offers the following comments for your consideration.

In the section on Groundwater (Regional Groundwater Regime-3.2.1.1) it should be noted that the recharge is vertical in the regime of the groundwater divide. However, rather than flowing horizontally north and south of the deep recharge area, it develops a horizontal component which increases as it gets further away from the divide.

On page 3-25 the comments on Groundwater Supplies center on the source of water for public water supplies and residential wells. It is not correct to say that "Groundwater" wells are typically screened 40 feet into the water table. If such a comment is made it should say "Residential" wells.

The first and last sentences of paragraph one on page 4-6 appear to be a contradiction and should be reconsidered.

Lastly, it should be noted in the Alternatives to the Proposed Action that redesigning the shape or the height of the landfill would not only move the footprint closer to the residences to the west but also closer to the Station Road Well Field.

Very truly yours,

E. J. Rosavitch
E. J. Rosavitch, P.E.
Chief Engineer

EJR:lf

cc: M. A. LoGrande
J. Hartnett
S. R. Dassler

Yaphank Taxpayers & Civic Association, Inc.

P.O. Box 41
Yaphank, New York 11980

December 3, 1992

Mr. James Heil, Commissioner
Dept. of Waste Management
Town of Brookhaven
3233 Route 112
Medford, NY 11763

RE: COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
TOWN OF BROOKHAVEN LANDFILL EXPANSION

Dear Mr. Heil:

After numerous hours of review and study, the Yaphank Taxpayers & Civic Association is submitting this statement regarding the DEIS for the proposed expansion of Cell 5 of the Town of Brookhaven Landfill.

1) Siting:

The siting of Cell 5 at its proposed location raises serious concerns:

- a) The Cell 5 site was not yet owned by the Town when its Site Analysis Plan was prepared and therefore, never went through the proper review process.
- b) The Cell 5 acres were donated to the Town by developer John McNamara in return for increased density on his planned Regency Oaks Subdivision, north of Woodside Ave. Given the controversy over McNamara land dealings in Brookhaven Town, this EIS process should be held pending the outcome of the ongoing Federal investigation and court proceedings.
- c) The dedication of Cell 5's 125 acre parcel is referred to in the Town Planning Board meeting minutes of June 13, 1988 (public hearing for Regency Oaks) and of November 3, 1989, (Resolution/Statement of Findings on Regency Oaks) as GREEN STATE, NATURAL STATE, FOREVER NATURAL, BUFFER AREA, PARKLAND, AND RECREATION AREA) - never as an ASHFILL site. This implies a misrepresentation by the Town and developer and should be addressed in a DEIS supplement.

2) Managing Operations:

The DEIS discusses leachate and drainage problems, soil erosion, groundwater and air pollution, as well as odors and gas generation. It fails to state how these problems will be controlled. How does the Town intend to manage this undertaking? We would suggest a comprehensive management/staffing plan be included in a DEIS supplement.

3) Groundwater Protection:

We are especially concerned about the groundwater protection. The Yaphank Taxpayers & Civic Assoc. has always maintained the possibility that the Brookhaven Landfill is sited over deep-flow recharge area Hydrogeological Zone 3. Referring to:

- a) Discussion of Hydrogeologic Zone Boundaries in the Vicinity of South South Yaphank, Long Island, NY by Charles J. Voorhis, Director, Division of Environmental Protection Report, dated January 30, 1986.

Yaphank Taxpayers & Civic Association, Inc.

P.O. Box 41
Yaphank, New York 11980

- 2 -

To: Heil, Cell 5

12/3/92

- (b) Evaluation of Hydrogeologic Data in the Vicinity of the Proposed Regional Ashfill at Yaphank and the Brookhaven Landfill, by Geraghty & Miller, Report, dated May, 1986.
- (c) Geohydrological Investigation of the Regional Resource Recovery Ashfill Site at Yaphank by Dr. Kevin Phillips, Report, dated February 1986.

All three reports conclude that speculation on the recharge-discharge zone boundaries in the Landfill vicinity further justifies the procurement of additional data. Until this contention is proven once and for all, we feel this expansion should not go forth.

4) Air Testing:

The DEIS, again, is lacking in not addressing ASH dust and gas emissions. Continuous air testing should be provided for at the ashfill/landfill site and also strategic sites in the adjacent communities.

5) Capacity:

The major difficulty with Cell 5 lies with its planned disposal capacity which our Association feels is well in excess of the Town's foreseeable needs. The Town should maximize ways of reducing the waste stream through recycling and composting instead of locking us into an IMA with Hempstead for an 18 year period.

The DEIS should be amended, downsizing the expansion of Cell 5, and should consider the landfilling of ONLY Brookhaven's trash (that remains after recycling).

The Yaphank Taxpayers & Civic Association is a member of both Brookhaven Citizens' Solid Waste Alternatives Coalition and Longwood Alliance - both of whom have submitted detailed written commentary on the Cell 5 DEIS. Our delegates have participated in all discussion and meetings leading to formation of their statements. Therefore, as core members of both organizations, we direct the Town of Brookhaven to address and respond to all their concerns and proposals before the DEIS is accepted.

In 1986 the YT&CA fought a regional ashfill (with the Town's backing) to be located in the near vicinity. Gov. Cuomo gave us his word that he would not force this upon the residents of Yaphank. The Cell 5 landfill expansion is now becoming a REGIONAL ashfill with Hempstead burning ash from Hempstead, Brookhaven, New York City, and now Oyster Bay. We expect Gov. Cuomo and the DEC to keep their promise to us not to place a regional ashfill in our vicinity. Also, we expect Supervisor John LaMura and the Town Board to renew their alliance with the residents of Yaphank in stopping the State forcing Brookhaven Town from becoming the ASH CAPITAL of New York State.

We expect this statement to become part of the hearing record of Nov. 10, 1992.

Very truly yours,

Fran Hurley
Fran Hurley, SW Delegate

Valtina Petrofski
Valtina Petrofski, President

eak

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11790-2356

45

(516) 751-1389
FAX (516) 751-3839



Thomas C. Jorlin
Commissioner

December 4, 1992

James H. Heil, P.E.
Town of Brookhaven
Commissioner of Waste Management
3233 Route 112
Medford, NY 11763

RE: Town of Brookhaven Landfill Expansion
DEC #1-4722-00702/00002-0

Dear Mr. Heil:

The Department of Environmental Conservation has reviewed the Draft Environmental Impact Statement for the Town of Brookhaven's Cell 5 Landfill Expansion Project. We have a number of comments which are organized into general and specific categories below.

GENERAL COMMENTS

The DEIS has been prepared and circulated to the Department for review without the required Solid Waste Management Facility (6NYCRR Part 360) permit application on file with us. The DEIS indicates that the Town hopes to file the Part 360 application by the end of the year.

- (1) The level of technical detail presented in the DEIS is obviously not sufficient for the Department to perform a complete technical review of the landfill expansion from a permitting perspective. Upon receipt of the complete Part 360 application, with engineering report, plans, and all the other supporting documentation required in the regulations, we will review the design and engineering aspects of this proposal in detail.
- (2) As you know, a permit application under the Long Island Landfill Law must be accompanied by a comprehensive hydrogeological study pursuant to Part 360-2.11. Although it appears that the permit application with the 360-2.11 hydro study will be ready for

James H. Heil, P.E.
December 4, 1992
Page 2

submission shortly, the study has yet to be reviewed or accepted by the Department. Despite this, the DEIS seems to include a significant amount of information from the unreviewed 360-2.11 hydro study. We must therefore consider some of the site specific hydrogeological information included in the impact statement and some of the conclusions made from this information as unsubstantiated and inappropriate (at least temporarily).

Examples of such information include:

- Figure 3-13 Following Page 3-21. This figure as drawn does not reflect the downward head (.56 feet) measured between MW-2D and MW-11M and as such is misleading. This data appears to be derived from the 360-2.11 hydro study. A more representative depiction of flow through the site can be achieved by drawing flow sections through MW-5, MW-10, and MW-4 with an offset for MW-2 and MW-11, or to draw other sections which show recharge from MW-2D (upper glacial) into MW-11M (Magothy).
- Section 2.5.6 Operational Controls and Monitoring Page 2-24 Groundwater and leachate monitoring plans referenced in the DEIS, which are part of the 360-2.11 Environmental Monitoring Plan have not been submitted to or reviewed by the Department.
- Section 3.1 Water Resources Page 3-11 Statements concerning hydraulic connection of aquifers, permeabilities of aquifer materials, groundwater flow patterns, vertical and horizontal hydraulic gradients, existing groundwater quality, site monitorability, confining units, and the applicability of pump and slug tests are included in the DEIS yet are not supported with the raw and analyzed data typically included in the Part 360-2.11 hydro study.

Because the 360-2.11 hydro study has not been evaluated or accepted by the Department yet, statements and conclusions of fact in the DEIS based on the study cannot be adequately reviewed or evaluated. The complete hydrogeological study should be included in the DEIS (possibly as an appendix) or statements/conclusions based on the 360-2.11 hydro study should be removed.

- (3) Chapter 3 Environmental Setting and possibly other sections throughout the document (as appropriate) should be updated to include an accurate, concise description of the on-going composting operation in the area of the proposed Cell 5.

SPECIFIC COMMENTS

Section 2.3 Project Need Pg. 2-6 The final paragraph in this section mentions that the Cell 5 expansion will be permitted in January 1993 and operational by 1994. The remaining usable life of the existing Cell 4 is estimated at 1 to 1.5 years. The possibility exists that Cell 4 will be filled before Cell 5 is operational. A contingency plan to address such a situation should be prepared and included in the DEIS.

Section 2.4.3 Structures Page 2-9 Design and construction of a leachate storage tank will be required pursuant to Part 360-2.7(c)(6). Furthermore, the latest proposed revision to Part 360 (October 1992) requires a leachate tank for all new landfills. Such a tank must be designed with a three month capacity.

Section 2.5.3 Gas Management Page 2-12 Although the majority of the waste to be placed in Cell 5 will be inert, a large portion will be construction and demolition debris. This material can be a severe odor source. The Town should consider designing a more proactive system for mitigating potential odor problems. Possible measures could include ensuring that the existing Cell 4 gas generation and flare system have

James H. Heil, P.E.
December 4, 1992
Page 4

sufficient capacity to handle gas produced in Cell 5. Additionally, the design should include the installation of a lateral gas collection system as the cell is filled rather than drilling vertical wells later when the cell is close to capacity.

Section 2.7 Permits and Approvals Pages 2-27 through 2-29

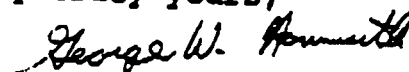
SPDES The new facility will require a new individual State Pollutant Discharge Elimination System Permit for stormwater. DEC will not issue general permits for new stormwater discharges associated with activity from new facilities which require other DEC permits such as solid waste management.

Air Pollution Control The document accurately reports that the Air permit for the Cell 4 gas recovery system will have to be modified to include gas recovered from the proposed Cell 5. In addition, if either of the following are proposed:

- (1) new, temporary or permanent flares for burning gas produced in Cell 5,
 - (2) new internal combustion gas burners for Cell 5;
- new Air Pollution Control permits will be required.

Thank you for the opportunity to provide comments on this DEIS. As stated above, we will be reviewing this proposal in much greater detail when the Part 360 application is submitted. If you have any questions, please call me at 751-1389.

Very truly yours,



George W. Hammarth
Sr. Environmental Analyst

GWH/rw
cc: C. Birr
R. Cowen
A. Grikstos
R. Mitrey
W. O'Brien; A. Wilson



CAESAR TRUNZO
3RD DISTRICT

ASSISTANT MAJORITY LEADER
FOR HOUSE OPERATIONS

CHAIRMAN
CIVIL SERVICE & PENSIONS COMMITTEE

THE SENATE
STATE OF NEW YORK
ALBANY 12247

WASTE MANAGEMENT
TOWN OF BROOKHAVEN
ALBANY OFFICE
LEGISLATIVE OFFICE BUILDING
ALBANY, N. Y. 12247
(518) 455-2811

1992 DEC -4 PM 3:47
HAUPPAUGE OFFICE
STATE OFFICE BUILDING
VETERANS HIGHWAY
HAUPPAUGE, N. Y. 11788
(516) 360-3236

BROOKHAVEN TIE-LINE
(516) 269-6696

December 4, 1992

James H. Heil, P.E.
Commissioner of Waste Management
Town of Brookhaven
3233 Route 112
Medford, New York 11763

Dear Mr. Heil:

I am writing in regard to the Draft Environmental Impact Statement for the Town of Brookhaven Landfill Expansion. I offer the comments below for your consideration.

Unfortunately, the need for landfilling cannot be totally eliminated. I look forward to a time when recycling and composting methods and markets are optimized, and the amount of raw garbage and ash landfilled minimized. Toward this end, I encourage the town to initiate programs to reduce the amount of waste generated and increase the amount of materials recycled or composted. Specifically, I recommend that the town initiate a "Don't Bag It" program for grass clippings such as the one adopted by Islip. Islip expects to reduce the amount of grass clippings collected by 25,000 tons and save the taxpayers four million dollars each year. In addition, the recycling program should be expanded to include institutional and commercial waste.

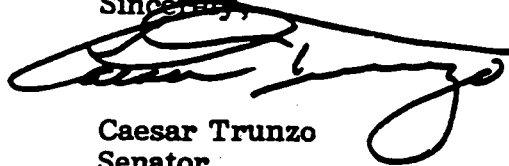
Due to the concern of fugitive dust emissions, I recommend inspections to ensure that trucks transporting the ash are covered as is required by Part 360 regulations. No uncovered trucks should be allowed to leave the Hempstead Resource Recovery facility or enter the Brookhaven Landfill site. Operational procedures should include all measures necessary to mitigate fugitive dust emissions from the site and to minimize odors from the sections of the landfill where bypass waste is disposed.

Lastly, I do not agree with the Town's proposal to be exempt from daily cover of ash. However, in order to save landfill space and taxpayer dollars, alternatives could be explored. First, a cover of six inches of soil or sand on ash may not be necessary on a daily basis. Secondly, the March 1992 issue of Waste Age reported on two methods of cover that may save money and landfill space. One cover is a foam and the other is a liner that can be used up to thirty times. I have enclosed the article for your review.

In conclusion, my overriding concern with Cell 5 is that the impact to residents and to the environment be minimized.

Once again, your consideration of my comments would be greatly appreciated. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Caesar Trunzo", written over the word "Sincerely,".

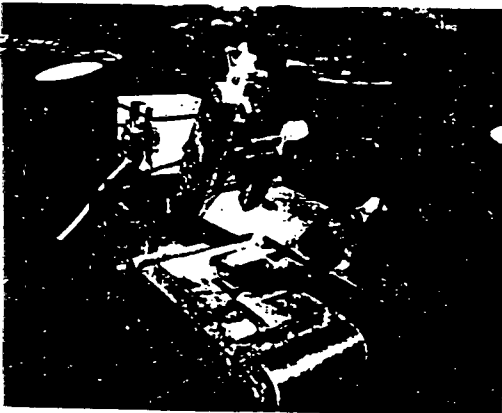
Caesar Trunzo
Senator

CT/bas

encl.

March 1992

BUILDING A BETTER LINER SYSTEM



Fluid Systems, Inc.

Double-edge welders join liner panels with two seams to help reduce the risk of leakage.

.....

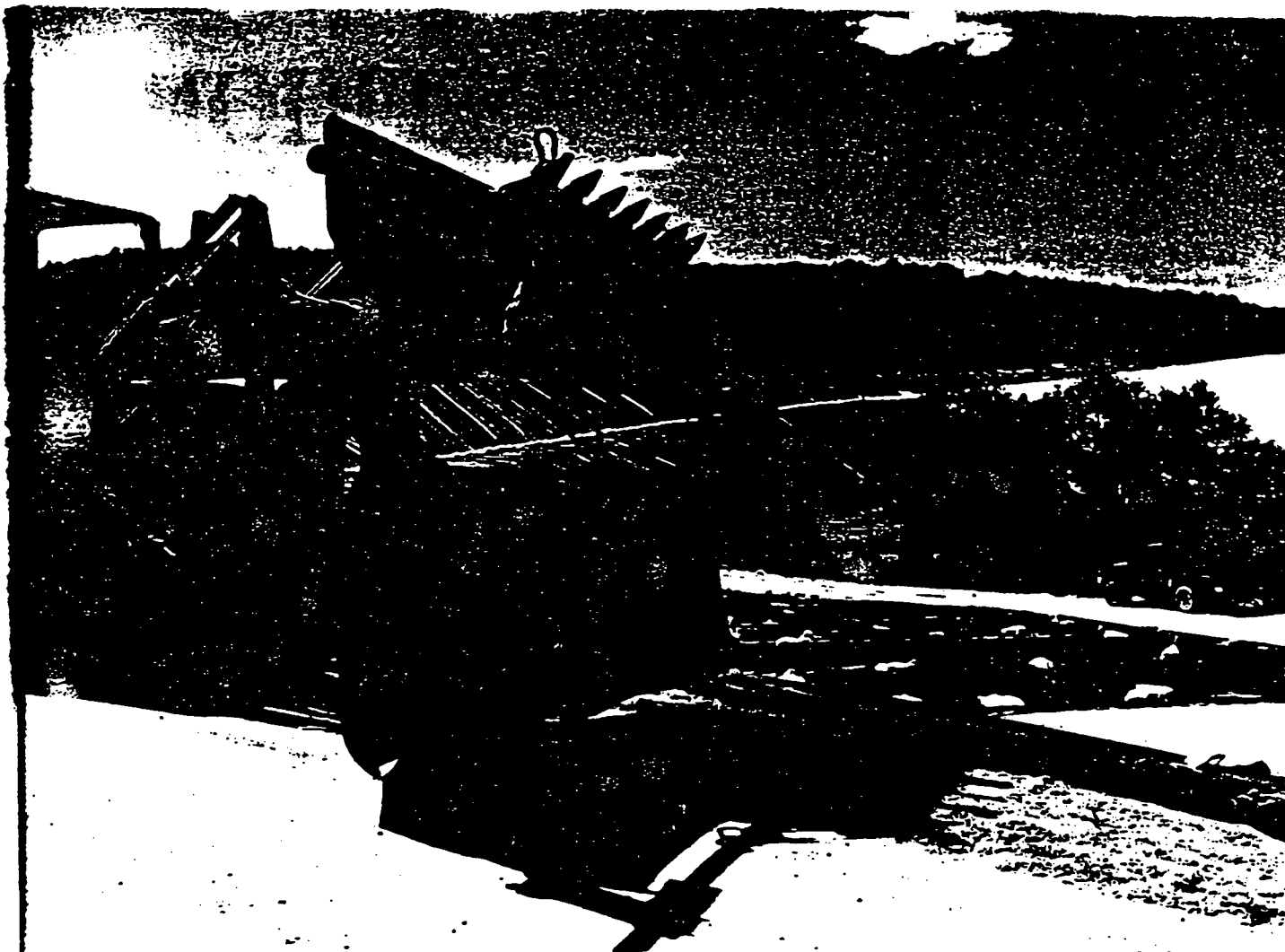
Subtitle D may be an unwelcome financial burden for some landfills, but there are products on the market designed to save valuable space and trim costs.

On October 9, 1991, the U.S. EPA promulgated its regulations concerning design, operation, and closure of municipal solid waste (MSW) landfills. After more than five years of tireless debate, regulations under Subtitle D of the Resource Conservation and Recovery Act (RCRA) have finally been developed, calling for states to adopt and enforce regulations on liner and leachate collection systems design, gas monitoring, and financial assurance upon closure, among others (see *Waste Age*, October 1991).

The regulation is self-implementing, meaning that landfill owners and operators are required to be in compliance regardless of state regulation. States that seek to enforce the EPA rule must get "approval" from EPA and are given more

.....

BY RANDY WOODS



Fluid Systems, Inc.

flexible design and scheduling treatment, providing their criteria meet the minimum federal requirements. In a worst-case scenario, the requirements for liners in unapproved states call for at least one 30-mil flexible membrane liner and a two-foot layer of compacted soil with a permeability of no more than 1×10^{-7} cm/sec.

Years ago, states like New Jersey and New York took their own initiative, passing much stricter standards such as double composite liners; Kentucky, Pennsylvania, and Virginia have provisions calling for a composite liner plus an additional flexible membrane liner. Since the proposal of Subtitle D in August 1988, the number of states with landfill design criteria doubled from 18 to 36 by 1990, according to EPA figures. Compared to the regulations of many of these states, the federal requirements may seem far less demanding, but for the remaining states, Subtitle D may finally signal the end of the linerless landfill.

In terms of the environment, this regulation appears to be a step in the right direction, but what does it mean for the landfill operators and state regulatory agencies that must carry it out? For many in the industry, it means a lot of money, not just for design and operation of new, up-to-date landfills, but also for lining lateral expansions at existing facilities—money

that will surely be a boon for the manufacturers and distributors of landfill liners and geotextiles in the next two years when all states must comply.

Ready to fill a need

Although data on the current usage of liners/geotextiles may vary, it shows there is a potentially large market for these materials, especially in municipal landfills. According to the 1990 Landfill Tipping Fee Survey compiled by the National Solid Wastes Management Association, about 81% of 219 MSW landfills surveyed, the majority of which are privately owned, had liners—mostly made of clay—already installed; 68% had leachate collection systems; and 65% had methane monitoring. However, David S. Eakin, president and CEO of Gundle Lining Systems (Houston), one of the nation's largest liner/geotextile manufacturers, says that less than 10% of the 6,000 operational landfills in the U.S. have liners or leachate systems sophisticated enough to pass Subtitle D requirements. EPA officials predict that the cost of the new rules will run about \$330 million per year.

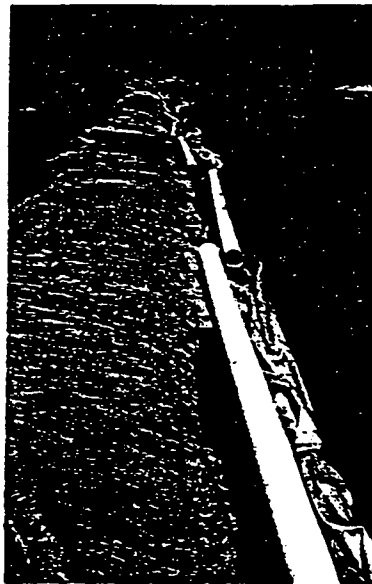
With a deadline of less than two years to conform to Subtitle D design standards, several liner/geotextile companies are poised to assist. "The market is currently quite com-

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petitive," says George Zagorski, vice president, sales and marketing, for Fluid Systems, Inc. (Cincinnati, Ohio), a distributor of landfill products. "It's difficult to predict if there will be a large spike in demand, but we anticipate strong growth in '92 and beyond."

While some landfill operators seem to be scrambling to meet these new requirements, the atmosphere is not quite as tense in the world of landfill construction. "Subtitle D took a relatively long time to be enacted," Zagorski says. "Many states already tightened up their landfill liner regulations in anticipation of Subtitle D and are ready with their own regulations."



In addition to the liner requirements, Subtitle D also calls for a mandatory leachate control system.

Liners for the '90s

So as not to be surprised by federal regulations, some liner manufacturers have been preparing for a greater demand from landfill operators by simply making better products. "The liners of today may be getting a bit more expensive, but their performance level is higher," says George Dodson, product manager for liner and geotextile manufacturer Akzo Industrial Systems Co. (Asheville, N.C.). "Landfill operators can now get better performance at a lower millage. There are less problems with cracking and more conformity to irregularities that may be found at the base of a landfill."

A/A Manufacturing, a Medford, Mass., liner manufacturer, recently announced its introduction of a new flat-die extrusion-calendering machine to North America. The machine calenders (squeezes between rollers) a 23-foot-wide, triple-ply sheet of high-density polyethylene (HDPE) and provides more uniform thickness, less internal stress, and greater crack resistance and stability, according to Stanley M. Lewis, A/A's president. Another flat-die system made by Egan Machinery Division of John Brown, Inc. (Somerville, N.J.), produces a liner sheet 23.5 feet wide which can be composed of a greater variety of resins than most conventional, blown-film processes.

Because the wide, continuous sheets made by both A/A and Egan are larger, it means fewer seams and potential leaks, and less time required for installation. Continuing the trend toward larger liners, Egan is currently working on an extrud-

er which will produce a 30-foot-wide sheet, while last summer Gundle introduced a 34.5-foot-wide sheet, one of the largest in the industry. The Gundline® HDPE liner ranges from 30 to 140 mils thick and can be applied by the company's patented extrusion welding machine, says Hal Pastner, Gundle's vice president, sales. Gundseal®, a composite liner and bentonite clay mat that can be easily rolled out in 17.5-foot sheets, is equivalent to the Subtitle D liner/dirt requirements while saving space, Pastner says. Bentonite, named after Ft. Benton, Mont., where it was first discovered, is an extremely absorbent, porous clay formed by decomposed volcanic ash, which holds liquid like a sponge and becomes impermeable. "Using these geosynthetics is very cost-efficient," he says. "Applying them is not as time-consuming as bringing in regular clays, especially during adverse weather conditions."

Maintaining a high coefficient of friction is also important in making landfill liners, Zagorski says. The added friction allows the liner to be placed on a steeper angle, which provides more space for waste in a landfill. Friction-Seal™, an HDPE liner made by National Seal Co. (Aurora, Ill.), is extruded with a rough surface on one or both sides to create a higher friction angle. "Take, for example, a 10-acre surface area in a landfill 40 feet deep," he says. "Changing the slope from 4:1 to 3:1 could gain an additional 80,000 yards of usable airspace."

Along with National Seal's conventional liners, Fluid Systems also distributes Coex™, a highly elastic geo-membrane laminated with HDPE and VLDPE which lets landfill operators adapt to the harsh realities of landfill siting in the 1990s, Zagorski says. "Because of the tightening of the rules on permitting new landfills, some owners are 'piggybacking' new cells on top of existing facilities," he says. "Coex maintains the chemical resistance of HDPE but is more forgiving to the problems of settlement and subsidence of the existing landfill underneath."

Thin geotextiles, thick profits

The minimum Subtitle D regulations for landfill construction do not stop at landfill liners; along with the two feet of soil required to accompany the flexible membrane liner, an additional layer of granular material must be placed within the leachate containment system and maintain less than one foot of leachate. With the technological advances in synthetic geotextiles, these layers of required protection can be safely reduced often at a lower price than sand, dirt, or gravel.

Akzo's Enkacushion™ geotextile is one example of how high efficiency can save money for landfill operators. Made from Akzo's three-dimensional nylon matting—called Enka-

mat[®]—and pressed, pulverized rubber tires, Enkacushion is just 0.75" thick, has better friction characteristics than soil, and can withstand 80 psi—the equivalent pressure from a landfill 164 feet high with waste weighing 70 lbs/ft². Dodson says, "Instead of two feet of soil, you've got less than an inch of geotextile," he says. "It's definitely a revenue-generating product."

Gundie also has a wide assortment of textured geotextiles to help protect liners on steeper slopes and control leachate movement, such as Gundnet⁴ and Fabri-Net⁶, which assist in better leachate flow and drainage characteristics. Pastner says, "Vertically-installed Gundwall, a synthetic geomembrane sunken outside the liner system, also helps to curb lateral movement of leachate."

Geotextiles made by National Seal also help in channeling and containing leachate away from the waste. Zagorski says, Polynet², an extruded profiled mesh, and Tex-Net⁸, a laminated composite of Polynet, both help to filter and drain leachate into a collection system. "[Polynet] can be used in lieu of the one foot of aggregate," he explains. "In addition to the material savings—in regions where aggregate is expensive—the owner/operator gains a foot of airspace. Tex-Net allows [landfill operators] to install leachate collection capability on steep slopes where conventional aggregate would be unstable."

Saving six inches a day

Of course, waste is not the only material that is added to a landfill. For many years, operators have been required to cover the working face of each cell with at least 6" of soil each day to control odor, litter, surface runoff, and pests. When dirt is used, it is trapped there forever once the next day's refuse is spread. However, if the dirt could be successfully removed or more densely compacted, the space savings would be obvious.

In response, Phillips Fibers Corp. (Greenville, S.C.) set

out to develop a system where the daily cover is reusable. The result was Fabrisoil[®], a non-woven polypropylene geotextile introduced in December 1990. Each panel can be used 10 to 20 times, costs about \$2.25/yd², and takes between 10 and 20 minutes to install. One of Fabrisoil's first uses was a six-month trial at the Macon, Ga., city landfill. According to Larry Brown, the city's director of public works, Macon

saved approximately \$5,000 per week in landfill and labor costs while increasing the remaining capacity by 25 to 30%. Today, the product is being used at 50 sites in 21 states.

Late last summer, Amoco Fibers Corp. (Atlanta) came out with its own alternative daily cover called Sani-Cover[™]. The geotextile, made of polypropylene or polyester, can be custom-made to any size and installed on the working face in half an hour, compared to the full hour needed to spread a dirt cover

with heavy equipment, says Greg Scales, sales engineer for distributor Fluid Systems. Although the cover has a higher initial cost than soil cover—\$1/yd² for Sani-Cover vs. \$1.50/yd² for dirt—the reusability of the geotextile quickly adds up. According to Scales, the material, installation, and space savings amount to more than \$3,000 per day—\$750,000 per year—assuming a lifecycle of 30 uses per panel.

Despite the cost benefits of using alternative daily covers, Phillips and Fluid Systems both warn that a removable panel is not necessarily a replacement for dirt or other cover materials. "[Sani-Cover] is really just an alternate—you really can't use it every day," Scales says. "Sometimes it's a good idea to put down dirt for use as a firebreak should a landfill fire occur."

Another alternative cover product replaces reusability with higher compactibility. Companies such as 3M Environmental Protection Products (St. Paul, Minn.), Chubb Environmental Security (Exton, Pa.), and Rusmar (West Chester, Pa.), have all developed synthetic foams which can be sprayed onto a landfill face each day at a thickness of 1-6"—depend-



An applicator sprays Chubb's TerraFoam[®] daily cover on a landfill face in lieu of 6" of space-consuming dirt.

Liner Contd.

ing on state regulations—to provide the equivalent protection of 6" of dirt. When the next day's refuse is dumped on top, the foam crushes to a mere fraction of its applied height.

Since 1985, 3M has been producing alternative cover in the form of Sanifoam™, a light, air-puffed foam which can be manually applied with a hose for landfills with less than 600 tpd or sprayed on with an articulated boom for larger facilities. The foam, now used in 30 states, takes about 30-40 minutes to apply and quickly cross-links in place to form a hard, water-resistant surface, says Dale Kent, 3M's product sales manager, environmental protection products.

"The foam usually runs 12 to 15 cents/ft² depending on the depth of the cover, anywhere between 1-2 inches," Kent says. "Typically the cost comparison to dirt application is a wash for labor. The real cost savings come from the added airspace. Once waste is placed on top, the foam is crushed down to one-tenth to one-fifteenth of its original size. Also, when conditions inside the landfill are aerobic, [Sanifoam] is biodegradable."

TerraFoam®, an alternative foam cover made by Chubb, has been used on landfill faces for more than one year, says manager of operations, William G. Swayne. The 1,500-tpd Grand Central landfill, in Penn-Argyl, Pa., has been a customer of TerraFoam® for nearly one year, Swayne says. Each day, landfill workers spray one-third to one-half of the working face with the foam; the rest is covered by dirt to support landfill vehicles driving over the cell, says Grand Central site manager, Nolan Perin. "We estimate that we can save about 200 yards a day," he says. "That means that for every 10 working days, we pick up an extra day in space."

The foam product is more expensive than dirt—sometimes four times the price if dirt can be found nearby—but Perin says that, over time, the re-selling of extra airspace can reap large dividends. The only trouble spot he can find are certain weather restrictions, such as heavy rain or extreme cold and wind which hampers both the installation and performance of foam covers. "We haven't really had a heavy rain, but we know that [TerraFoam®] can hold three to four days under a moderate rain," he says. "Under normal conditions, we can usually get about a full week out of the cover."

Is two years enough?

With this litany of new or improved products on the market, the landfill product industry appears to be ready for the new requirements on landfills imposed by Subtitle D. But are these new tools ready to be implemented? With a continuing recession, massive state budget cuts, and persistent opposition to new landfill siting, applying the minimum Subtitle D rules in planned landfill expansions by October 1993 may prove to be difficult.

Gregory Richardson, an associate for the environmental consulting firm of Hazen & Sawyer (Raleigh, N.C.), says the real losers in the Subtitle D scenario are the unapproved states. "A lot of states feel they have been left in the lurch by the federal government for saddling the burden of implementation on them," he says. "If the states cannot comply with EPA rules, the environmental 'green groups' will begin suing the states, not the EPA. These states are really in a pickle."

Another worry among landfill owners and environmentalists alike is the possibility of some landfill managers sacrificing superior workmanship for the sake of meeting the looming Subtitle D deadline on time. "The nature of the [landfill] product and application requires qualified construction," Zagorsky says. "When Subtitle D hits full stride, a shortage of qualified installers could develop. This could be especially true in the northern U.S. during the summer months, due to the shortened construction season."

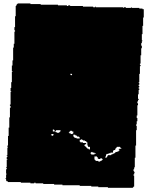
For the time being, however, landfill product manufacturers will be enjoying this regulatory surge while they can. Amid countless reports of recessionary sales figures for most waste companies during fiscal 1991, Gundie, for example, reported a first-half increase of 32.1% over last year's comparable period; net income rocketed 57.4% over the first half of 1990.

The only threat that the "R"-word may pose to the industry, Zagorsky says, is that some landfill owners may be delaying the retrofitting of some built-but-inactive cells. "Sales have been creeping up the last couple of years and I don't see any sign of them going down," he adds.

"We expect to have about a six-month lag [from the announcement of Subtitle D] until we really feel the economic effects," says Akzo's Dodson. "We do know that many design firms have been planning for this regulation for a while. After sitting in on plenty of community meetings and talking with mayors and councils, we feel that the public sector is well-informed. Subtitle D is what they're all talking about."

Although the new regulations will mean profits for some and headaches for others in the waste industry, Subtitle D will, at the very least, make each and every one of the states—approved or not—aware of the increasing value of landfills, says Chubb's Swayne. "Regulatory enforcement has been around for quite some time, and we all know that higher tip fees go hand-in-hand with it," he says. "I've always thought of landfills as being a resource, or a valuable commodity to be conserved. I think, with Subtitle D, there will be a greater realization across the country that good landfill management is going to cost a lot of money, just like any other resource or commodity." ■

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 Nov. 20, 1992

Dear Mr. Hill,

I am writing this letter on behalf of my family. I have two daughters, Roselle age 4 + Dana age 7 months. My husband + I moved into Medford 5 years ago unaware that there was a landfill approx. 3500 ft away from our home. I can tell you I was not pleased. There are days when the odor is so unbearable that I hate to leave my house. Now you have plans to open up another landfill 700 ft. from my front yard! There are days when on a windy day my car has black ash on it, I wonder what that does to my families lungs! How can you think that this "new" landfill will be any better? I would sell my home, but who wants to buy a house that is practically sitting on a garbage dump?! The ~~ere~~ economy is bad enough, should I take off another \$15,000.00 off the price of my house? OR maybe since you seem to think this is safe, you would like to buy my house?

I realize that garbage has to go somewhere, put it away from homes on Long Island. What about where Shoream is located? What about the Pine Barrons? If it's not safe for the Pine Barrons, then it's not safe for families!

I am enclosing of picture of my beautiful

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 NOV 24 AM 9:46

because if this landfill is approved, my
children will not be able to go out & play
on a beautiful day when there is a slight
breeze.

Sincerely,

Mrs. Nancy Cantina

75 Rustic Ave.

Madford, NY 11763

COUNTY OF SUFFOLK

48



ROBERT J. GAFFNEY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

STEPHEN G. HAYBUR, P.E.
COMMISSIONER

November 23, 1992

Town of Brookhaven
Department of Waste Management
3233 Route 112
Madford, N.Y. 11763

Attention: James Heil, Commissioner

Re: C.R. 16, Horse Block Road, "Brookhaven Landfill" DEIS.

Gentlemen:

We have reviewed the above referenced DEIS for the above referenced development.

This Department had previously commented on this proposed development on March 30th of this year to the Towns consulting engineer, McLean Associates. We have attached a copy of these comments for your use in preparing the FEIS for this project. We are also enclosing a copy of a memorandum from this Department's Traffic Control and Engineering Division to our Permits Division (Memorandum dated 11/20/92) regarding this Departments most recent comments with regards to the Traffic Signal that will be required to be installed at the main access to this site.

In addition, a permit from this Department will be required pursuant to Section 136 of the Highway Law for any improvements this Department deems necessary along the County right-of-way.

If you have any questions, kindly contact this office at 852-4100.

Thank you for your cooperation in this matter.

Very truly yours,

Richard J. LaValle, P.E.
Chief Engineer

By:


M. Paul Campagnola
Permits Engineer

RJL/MPC/pc
cc: McLean Assoc.
Matthew T. Rankel, SCDPW

COUNTY OF SUFFOLK



Robert J. Gaffney
Suffolk County Executive

Stephen G. Hayduk, P.E.
Commissioner

DEPARTMENT OF PUBLIC WORKS

March 30, 1992

Louis K. McLean Associates, P.C.
437 South Country Road
Brookhaven, New York 11719

Attention: Raymond DiBiase, P.E.

Re: C.R. 16, Horseblock Road, "Brookhaven Landfill".

Gentlemen:

We have reviewed your plans for the relocation of the entrance to the existing landfill and offer the following comments:

1- The entire roadway shall be resurfaced from the east end of the raised median to the east end of the project with 1" of asphalt (Item 51FX). Please note the revisions which we have made to your plans and typical sections denoting this requirement as well as other roadway modifications and or additions.

2- Through the use of hatch lines, block out the extreme right lane in the three lane eastbound section from the proposed right turn lane on the east, westerly to the end of the three lane section.

3- Add broken white lane lines for a distance of 200' east of the new driveway, to separate the two eastbound lanes. Add the necessary signs for lane transition.

4- Increase the width of the westbound lanes as shown on the pavement marking plan.

5- Relocate proposed signal heads.

6- Alter order of signal phasing.

7- Change loop lead in vires for loops 01a and 01b from running to the south edge of pavement, to the north edge.

8- All loops shall be wired in parallel, except those noted on the plans.

9- Add new conduit run from relocated loop lead-ins to pole on the north side of Horseblock Road.

Page - 2 -

March 30, 1992

Louis K. McLean
"Brookhaven Landfill" cont'd

- 10- Change faces 2.5.6 and 7 as shown on the plans.
- 11- All cable runs, including interconnect cable, shall be underground and not overhead.
- 12- Item T40 is unnecessary for a new controller.
- 13- Install a new controller with built in coordination at the C.R. 99/ C.R. 16 signal.
- 14- The Town will be required to obtain a Highway Work Permit from this Department for this proposed work.

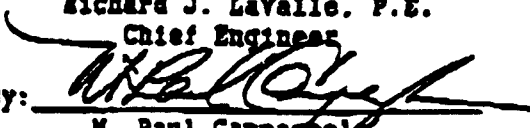
If you have any questions, kindly contact this office at 852-4100.

Thank you for your cooperation in this matter.

Very truly yours,

Richard J. LaValle, P.E.
Chief Engineer

By:


M. Paul Campagna
Permits Engineer

RJL/MPC/pc
cc: Matthew T. Rankle, SCDPW

SUFFOLK COUNTY DEPARTMENT OF PUBLIC WORKS

Traffic Control & Engineering Division

MEMORANDUM

TO: M. Paul Campagnola
 FROM: Robert J. Bornholdt
 DATE: November 20, 1992
 RE: Town of Brookhaven Landfill at C.R. 16 Signal Plan

We have reviewed the above-mentioned plan, and offer the following comments:

1. Revise span alignment slightly as shown on attached plan and reposition heads accordingly.
2. Revise loop lead-in saw cuts as shown on attached plan.
3. Revise interconnect cable to be 10 conductor not 5 conductor on all plans.
4. Revise notes as shown on attached plan regarding phasing.

By: Bob Bornholdt
 Robert J. Bornholdt

RJB/gc
 Attachment

THE LONGWOOD ALLIANCE

49

P.O. Box 410
Middle Island, NY 11953
December 1st, 1992

James P. Heil, P.E.
Commissioner of Waste Management
Town of Brookhaven

Comments on Draft Environmental Impact Statement (DEIS) for Proposed Landfill Expansion Project:

Dear Commissioner Heil:

As described in the DEIS the Landfill Expansion of Cell 5 will require 56 acres, and will enable the Town of Brookhaven to accept 1,250 tons per day of ERF Ash and other waste stream components. The estimated life of the expansion area is estimated to be approximately 18 years.

This proposal generates several areas of concern. The Alliance reminds the Town that ERF Ash is the worst by-product of incineration. ERF ash contains all the toxins found in raw garbage in a more concentrated form. But for an exemption in the law, ERF ash would be considered a hazardous substance. Thus, the Alliance continues to object to the intermunicipal agreement (IMA) which exchanges 200,000 tons per year (TPY) of Brookhaven's raw garbage for 230,000 TPY of ERF ash. Consequently, we strenuously object to the size of the proposed expansion project which assumes that the Town of Brookhaven will continue to trade raw garbage for ERF ash through the year 2009. The DEIS states on p. 7-7 that this assumption represents a major uncertainty. The Alliance agrees, and therefore, recommends that the expansion be downsized to provide only enough landfill capacity for the first phase of the IMA.

The Alliance further objects to the total disregard of external costs associated with the expanded landfill. On pp. 7-8 and 7-9 cost comparisons between a 13 year and 18 year landfill are calculated. The 13 year option represents a 5 year reduction in costs associated with increased water, and air contamination. Nowhere is this decrease in diseconomies associated with the downsizing of the landfill reflected in the cost calculations. We ask that this DEIS be considered incomplete until such calculations are fully considered.

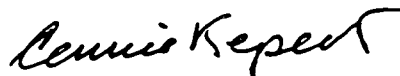
Although the leachate control measures described in the DEIS are "state of the art" they can only minimize the contamination of our aquifers, they can not prevent it. We, therefore, assert that the expansion of cell 5 rather than protect the public health, and environment serves instead to threaten their further deterioration. We, hence object to the expansion of cell 5 on the grounds that it does not fulfill the intent of the 1983 Landfill closure law i.e. to protect our aquifers from contamination. The Alliance requests that the Town of Brookhaven adopt a solid waste management plan which strives to maximize protection of the public health and environment, and whose primary goal is the protection of our aquifers. We believe that such a plan would reduce the need for expanding our landfill capacity.

The discussion of alternative technologies contained on p. 7-10 is wholly inadequate. Missing from this discussion is an analysis of the effects on landfill demand which alternative technologies and possible legislation will produce. The Alliance has recommended the inclusion of commercial establishments in the recycling program; the adoption of an economic incentive to recycle; the adoption of a "Don't Bag It" program; a deposit law for non-car batteries; an increase in the number of recycling days from one to two, and a concurrent reduction in the number of pickup days for mixed trash; the adoption of the Excess Packaging Law, and the adoption of Suffolk Counties Plastic Ban. (I have enclosed the Longwood Alliance Solid Waste policy which includes the above suggestions.) Again, we would like to see included in this DEIS the concomitant effects on demand for landfill capacity which each of these alternatives would produce.

The potential for airborne contaminants emanating from the ERF Ash has not been adequately addressed. We ask that a study of existing ERF Ash sites, such as the Islip Landfill in Hauppauge, be conducted to adequately measure the potential for airborne contaminants. Until such a study is completed this DEIS should be considered incomplete.

The Longwood Alliance thanks you for this opportunity to comment on the DEIS for the Landfill Expansion of Cell 5, and we look forward to your response.

Sincerely



Connie Kepert
President
The Longwood Alliance

IV Solid Waste.

The majority of us have been accustomed to dealing with our garbage in an off hand way, out of sight, out of mind. However, how we manage our solid waste has an enormous effect on the quality of our lives now, and well into the future. **How we dispose of our garbage ultimately effects the quality of the water we drink, and the air we breathe.** We all produce garbage. We must all become responsible for disposing of it in a way which does not deteriorate the environment in which we live.

In 1983 the State of New York passed the 1983 Landfill Law to protect our aquifers from contamination. It therefore limits the amount of trash which can legally be landfilled. In an attempt to fulfill the mandate of the law the Town of Brookhaven is engaged in a Trash for Ash swap with the Town of Hempstead. Brookhaven is exchanging 200,000 tons per year (TPY) of trash for 250,000 TPY of ash. Ash is unfortunately the worst byproduct of incineration. It contains all the toxins found in raw garbage in a more concentrated form. Those toxins include, but are not limited to cadmium, nickel and lead. Toxins which escape our landfills, known as leachate, have been leaking into the ground at our Brookhaven facility for many years. This leachate has contaminated the wells of the Hamlet of Brookhaven, and threatens to contaminate the Magothy aquifer which lies beneath the landfill. Ash also has potential adverse effects on the quality of the air we breathe. The economic impact of the trash for ash swap is also questionable. Many believe that it would be less costly to landfill the waste which cannot be recycled, or composted rather than exchange that waste for ash. The Longwood Alliance hence continues to maintain that the burning of ash in our landfill does not fulfill the intent of the 1983 Landfill Law, threatens the quality of our air, and in the long run is at best economically questionable. In response the Alliance adopts the following policy goals:

1. To work to replace the "Ash for Trash" deal with a more environmentally and economically sound alternative.
2. To expand the current recycling program to include commercial establishments.
3. To provide the people of Brookhaven with an economic incentive to recycle.
4. To increase the number of recycling days to two and concurrently diminish the number of pickups of mixed trash from two to one.
5. To monitor the progress of Longwood School District's white paper recycling program.
6. To encourage the use of reusable plates and containers in local institutions, and businesses.
7. To encourage the adoption of Suffolk County's Plastic Ban.
8. To support the adoption of the excess packaging law.

9 To encourage Brookhaven to follow Islip's lead and initiate a "Don't Bag it" program which encourages homeowners to leave grass clippings on their lawns

10 To encourage the reuse of brown bags at grocery stores.

11. Work for a deposit law for non-car batteries to enhance the removal of an extremely toxic component of our solid waste.

12. To educate the public concerning the costs and benefits of environmentally safe solid waste disposal.

**IT IS OUR INTENTION TO WORK FOR THE ADOPTION,
AND IMPLEMENTATION OF THE ABOVE GOALS AS AN
ALLIANCE, AND TO ENCOURAGE OUR MEMBER
ORGANIZATIONS TO LEND THEIR FULL SUPPORT TO THEIR
ADOPTION AND IMPLEMENTATION.**

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN
1992 NOV 30 AM 10:25

318 Beaver Dam Rd
Brookhaven 7 Havelit
New York 11719
Nov 25 1992

James Theil Commissioner of Solid Waste
Management
Town of Brookhaven Rt 112 Havelit

Dear Mr Theil,
I am writing this letter in protest
to plans to expand existing landfill
between Wandside Ave and Sun rise
Rd. and also the problem of greatly
increased ash.

We recently found it necessary
to install city water in our Beaver Dam
Rd home due to contamination of nearby
wells.

There must be alternative ways to
deal with our waste i.e. increasing
our recycling programs.

Sincerely
Dully Longdon

Mailing address:
59 Hempston St -
Brookhaven NY 11701

Brookhaven Town
Waste Management
3233 Route 112
Medford, NY 11763

11-25-92

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN
1992 NOV 30 AM 10:25

To Whom It May Concern:

Please do not increase (expand)
the Brookhaven Town
Landfill. We need to
explore other environmentally
sound alternatives to effectively
dispose our waste.

Thank you.

Jackie Hartman
66-16 Lakewood Ct
Moriches NY 11955



ROBERT A.W. HEINS, A.I.A.
ARCHITECT

December 4, 1992

MR. JAMES HEIL
Commissioner
Department of Waste Management
3233 Route 112
Medford, NY 11763

VIA FAX TO: 451-6391

Re: Comments on Draft EIS
of October 1992
by WEHRAN-NEW YORK, INC.
for the TOWN OF BROOKHAVEN LANDFILL EXPANSION

Dear Commissioner Heil:

Please consider these comments with respect to the completed and presented DRAFT EIS:

1. The DRAFT EIS does not address by viable appraisals; by contacting the practicing real estate brokers in the East Patchogue, Bellport, Brookhaven, Yaphank to get and ascertain how the built landfill as it exists has depreciated property values in the area; further the DRAFT EIS does not address what the landfill expansion now proposed will cause in further depreciated property values. The approximate loss in value to the approximate 35,000 residents in these areas is purported to be in excess of \$1,500,000,000.
2. Further, the DRAFT EIS, does not address the impact of building a second mountain of 230 feet, as such geographical modification to the South Shore will render, as seen from the Fire Island National Seashore and from the Bay areas of the South Shore. The limited visual impact of the study is not complete.

I trust that the final Impact Statement will address the above items for Town Board and public input and comment and action.

Sincerely,
Robert A.W. Heins

cc: Supervisor

FAX 111-111

J Keith and Karen Rowley
325 Beaver Dam Rd
Brookhaven, NY 11719

December 2, 1992

Dear Supervisor John LaMura and the Town Board,

We urge you to oppose the expansion of the landfill to Cell 5. The landfill now is the cause of so many problems that are not being solved, and just the thought of such an expansion as is proposed is unjustifiable. When government acts, one hopes that it has answers before it undertakes new projects. We now have health problems for many residents living near the present landfill. They are not being addressed. We have horrendous odor problems, and when we call, we are told they will go away, but they never do. We have unaddressed issues such as the toxicity of the ash that your and my children will live with.

We have a real opportunity here to deal with our waste stream in a much more creative and less costly and less polluting manner. By increasing Brookhaven Town's efforts to recycle, reduce, and compost the Town of Brookhaven has a golden opportunity to be real leaders both on Long Island and in the State of New York. You can do this. You can show us that indeed, government is of the people, by the people, and for the people.

We hope you can go down in history as intelligent and thoughtful government. We hope that you will be known in this way, and not as the master builders of the biggest garbage heap on Long Island. What sorrow and pity to leave such a landmark as your legacy. You can do better!

Sincerely,

Karen Rowley
J Keith Rowley

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN
1992 DEC - 7 PM 2: 53

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 DEC -7 PM 3: 27

54

Bellport High School
Beaver Dam Road
Brookhaven, New York 11719

James H. Heil, P.E.
Commissioner of Waste Mgmt.
Town of Brookhaven
3233 Route 112
Medford, New York 11763

December 2, 1992

Mr. Heil:

The Draft Environmental Impact Statement put forth by the Town of Brookhaven, Department of Waste Mangement, consistently states that control of the waste stream is imperative to any solution of the Town's solid waste disposal problem. By accepting ash from the Town of Hempstead's ERF you have lost control. The Town of Hempstead is committed to tonnage inputs for its incinerator and therefore must actively seek solid waste from other sources. As of today the Town of Oyster Bay has signed a commitment to deliver solid waste to Hempstead's incinerator. What control does the Town of Brookhaven have over the quality of ash entering its facility?

The second flaw in the DEIS is that you consider this to be a landfill expansion and not what it really is, a regional ashfill construction. Years ago the Town of Brookhaven vehemently opposed the siting of a regional ashfill in Yaphank. At that time even the Supervisors Office opposed the plan. At that time the plans called for sealed concrete vaults to prevent any leakage of ash into the environment. Your present plans call for plastic liners and leachate collection fall short of the previous containment measures.

A final flaw with the DEIS is that the long range environmental impacts are not addressed. The local community surrounding the landfill might be seriously impacted years from now by errant ash dust or leachate. Three schools from the South Country Central School District lie directly downwind from the proposed expansion. Impact fees should be levied in order to cleanup any environmental degradations.

The Town of Brookhaven is proper in considering waste control and reduction as a viable means of solving its waste disposal problem. Ash and bypass from other municipalities only confounds the Towns solution. Strong lobbying efforts for the establishment of environmentally sound packaging certainly should be on of the Towns priorities. Thank you for your consideraton.

Students for Environmental Quality
Bellport High School

DAVA STRAVINSKY
75 SOUTH COUNTRY ROAD
TOWN OF BELLEVILLE, NEW YORK 11713

1992 DEC -7 PM 3:27

December 1, 1992

Dear Mr. Heil,

As a homeowner, taxpayer, and
mother of two young children, I
oppose the current plan to expand
the land bill.

I hope you will consider some
of the other alternatives you
have which are better for our
environment and cheaper, perhaps
in the long run.

Thank you.

Sincerely,

Dava Stravinsky

Medford Taxpayers & Civic Association
Post Office Box 439
Medford, Long Island, New York 11763
December 4, 1992



Comments concerning the DEIS-Town of Brookhaven Landfill Expansion

The Medford Taxpayers & Civic Association is opposed to the 70+ acre expansion of the landfill.

The MTCA finds expansion is currently eliminating the Town's needed will to pursue more environmentally sound solid waste management techniques. As long as we keep accepting Hempstead's "cash" for ash, the "will" to reduce, reuse, and recycle will cease to be the goal of Brookhaven Solid Waste Management. The inspiring efforts of each man, woman and Brookhaven child who has been educated and regularly comply with CURBY will also be lost.

Expansion of the landfill to accommodate garbage from outside of Brookhaven may provide quick, fix financing but economically and environmentally sells-out our future. Recycling is the long term economic and environmental winner.

The space we are allocating for Hempstead ash (plus that of all the other Towns that have contracts with Hempstead) only eliminates future landfill space for Brookhaven's garbage and makes prohibitively costly future Brookhaven Taxpayer landfill space.

Opportunities to enter into agreements for additional recyclable materials, composting of our major household waste stream will be opportunities quickly disposed of because of our agreement with Hempstead.

Additional ash adds only to an unnecessary toxic risk. Fugitive ash dust and further potential toxic leaching into groundwater become unnecessary hazards added to the existing odor, pollution and contaminant disposal problems.

Yesterday's, "state of the art" landfill facilities have become today's "Superfund Toxic Clean-up Sites." The lack of control, concern, and expertise as to the future impacts of what one puts into the waste stream cause grave concern. There are no guarantees!

Let's start on an aggressive recycling solid waste management plan!

The daily impact of additional tractor trailers whether it be from the nuisance, seemingly, uncontrolled, recycling businesses on ~~Beacon~~ Avenue or the parade of trucks to the landfill are hazards one community need not continually be forced to sustain. The Medford, Yaphank, Bellport, Brookhaven area should not become a Regional Ashfill and Recycling Center. Who will indemnify the surrounding hamlet residents against all loss and risk?

Yours truly,
Don Seubert

Don Seubert
Pres. MTCA
475-4783

RECEIVED
SOLID WASTE MANAGEMENT
DEPT OF BROOKHAVEN
DEC 11 2:50

1. RE: CELL 5 OF LANDFILL

BROOKHAVEN VILLAGE ASSOCIATION, INC.
P.O. BOX 167, BROOKHAVEN, NEW YORK 11719

November 10, 1992

Supervisor La Mura and Members of the Town Board:

I would briefly like to stress one topic concerning the Brookhaven landfill and that is the potential health hazard of the existing landfill and the proposed expansion.

The incidence of cancer in individuals who reside close to the older landfills on Long Island is higher than the average for N.Y. State.

Although the cause has yet to be defined, extensive epidemiological data show an alarmingly high breast cancer rate in women who live in Nassau and Suffolk Counties. The statistics show a 10-20% higher breast cancer incidence compared with the average for New York State.

I am not aware of any epidemiological studies on the cancer rate in people who live close to the Brookhaven landfill.

As Town officials who make major decisions that affect the health and quality of life of the residents of Brookhaven, you should carefully take into account the impact of the proposed landfill expansion on the surrounding communities. The existing landfill has already had a large negative impact on the quality of life in those communities.

I ask that you consider the following:

1. The materials that are being incinerated in the Hempstead facility and the ash should be monitored on a daily basis. Needless to say, Brookhaven Town should not accept ash that contains hazardous levels of compounds such as heavy metals.

2. The particle and gas emissions from the landfill as well as the ground water should be tested for pollutants on a daily basis and the results made accessible to local civic groups or perhaps the results published each month in the Long Island Advance or other newspaper.

3.

3. Brookhaven Town, together with New York State and perhaps with federal funds, should immediately initiate an on-going epidemiological study of the incidence of cancer and neurological disorders

: individuals who reside or work within a 3 to 4 mile radius of the landfill.

I think it is your responsibility to safeguard the health of the residents who live close to the landfill and by diligent monitoring and reporting, you will show good faith.

Thank you

Sincerely
Nicholas Delias
NICHOLAS DELIAS
MEMBER, BROOKHAVEN
VILLAGE ASSOCIATION

South Country Alliance [✓]

P. O. BOX 462, BELLPORT, NEW YORK 11713

November 30, 1992

Commissioner James Heil
Brookhaven Town Department of Waste Management
3133 Route 112
Medford, NY 11763

Dear Commissioner Heil:

The Executive Board of The South Country Alliance has asked that I write to convey our strongest objection to the addition of a fifth cell at our Brookhaven Town landfill site. We are concerned about the adequacy of the Town's Solid Waste Management Plan to live up to the letter and the spirit of the Environmental Impact Statement recently submitted by the Town. We see also, a violated trust that the proposed use of this land goes contrary to the original intent that it remain an open and natural buffer area to help ensure the well-being of the many people who make their homes in this part of Brookhaven Town.

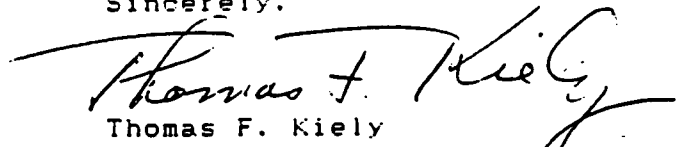
The Town's record of not following up on the most basic of landfill alternatives, namely reduction of the waste stream and the priority of reuse and recycling troubles us. It troubles us more that if this fifth cell comes to pass, the Town's ability and resolve to implement and enforce the procedural safeguards that the DEIS proposes will be found to be inadequate.

Bluntly stated, it seems to be the public perception that the Town has already floundered in giving us pollution-free air. It can only be imagined, for now, whether its guarantee of pollution-free ground water can be worthy of our trust. Again, your past record does not speak well for you.

Another aspect of this whole affair which is new to many of us, but seems of negligible importance to the Town, is the idea of a "Host Fee". Should the worst come to pass, is it not the duty of the Town to pursue any cost saving to us the taxpayers? Again, this short-sightedness just adds to our concern about the overall "business as usual" approach that just does not address the long-term welfare of the people of Brookhaven Town.

We look to Town officials such as you to seek excellence, not expediency, by doing the right thing - rethinking Cell Five.

Sincerely,


Thomas F. Kiely
Chairman, Environmental Affairs



Town of
Brookhaven
New York

DEPARTMENT OF PLANNING, ENVIRONMENT
& DEVELOPMENT

CAROLE S. SWICK, R.L.A., Commissioner

DIVISION OF ENVIRONMENTAL PROTECTION

December 4, 1992

TO: Jim Heil, Commissioner of Waste Management
FROM: John W. Pavacic, Environmental Planner *JWP*
RE: DEP Comments on DEIS for Landfill Expansion

Dear Jim:

Thank you for providing us with the opportunity to comment on the Draft Environmental Impact Statement for the Town of Brookhaven Landfill Expansion. We have reviewed the document and offer the following:

2. DESCRIPTION OF THE PROPOSED ACTION (pp. 2-1 to 2-29)
 - 2.2 Location of the Project (pp. 2-4 to 2-5)
 1. In the last paragraph of this section, it is recommended a figure be provided for the total area of the 534-acre waste management facility which is occupied by the existing landfill.
 - 2.4.1 Site Configuration (pp. 2-7 to 2-8)
 1. In order to ascertain how the proposed landfill expansion area will compare with existing components of the existing 534-acre waste management facility, it is recommended the following information be provided:
 - a. total area of existing landfill
 - b. total existing paved area (roads, driveways, etc.)
 - c. total existing building area
 - d. total existing natural area
 - e. total existing lawn/landscape area
 - f. total existing area not included in a-e above
 - g. total proposed paved area
 - h. total proposed natural area to remain
 - i. total proposed lawn/landscape area
 - j. total proposed area not included in g-i above

2.5.5 Materials Management (pp. 2-14 to 2-25)

1. On page 2-15 under "Daily Cover" and under "dust Control" on page 2-21, the DEIS discusses the control of dust with water. However, how will this be accomplished during freezing and subfreezing temperature conditions?
2. In regard to the discussion of dust control on page 2-21, will any periodic air quality monitoring occur downwind of and adjacent to the working face of Cell 5, especially for aerosols and microscopic particulates?
3. Under the discussion of Noise Control on pages 2-22 to 2-23, the DEIS states that a 500-foot-wide buffer of existing natural vegetation shall be preserved along the west side of the site. Because residentially-zoned property is located on the south side of Sunrise Highway as well which could be developed in the future, will consideration be given to providing a sufficient buffer along this side of Cell 5 as well?
4. In the discussion of "Water Resource Contamination" and "Groundwater Monitoring" on pages 2-23 to 2-24, it is recommended it be stated how often wells will be sampled and at what times of the year.

3 ENVIRONMENTAL SETTING (pp. 3-1 to 3-75)

3.2.1.3 Existing Groundwater Quality

1. On pages 3-26 to 3-27, the DEIS discusses "Groundwater Supplies" and notes the Part 360 survey requirements for locating public and private wells within one mile downgradient of the proposed site. Although on page 3-26 only one private well is noted as being within the Part 360 boundary, according to Figure 3-14 there are a number of wells located just outside this boundary and which may be downgradient of Cell 5. Accordingly, it is recommended that the same consideration be given to these additional wells.

3.2.2 Surface Water (pp. 3-27 to 3-31)

1. In the discussion of "Surface Water Quality" on pages 3-30 to 3-31, the DEIS references sampling point BD-3 and states this point is also shown in Figure 3-22. A review of this figure finds that BD-3 is not shown, however.

3.2.3 Wetlands (pp. 3-31 to 3-32)

1. It should be noted that the wetlands discussed in this section are also regulated by the Town of

Brookhaven under Chapter 81 of the Town Code. In addition, freshwater wetlands extend further north than is shown in Figure 3-23. In the spring of 1991 wetlands which extend to a point just south of the MRF were delineated with flags on-site by staff of the Town Division of Environmental Protection and were apparently plotted on maps by Louis McLean Associates under the direction of Jim Gladysz. Accordingly, the correct wetlands boundary should be shown and the above-referenced information also discussed in the text.

3.3.2 Air Quality (pp. 3-34 to 3-36)

1. Is any consideration being given to sampling ambient air quality at the existing waste management site prior to the installation of Cell 5 in order to establish baseline air quality conditions?

3.4 Ecological Resources (pp. 3-36 to 3-42)

3.4.1 Vegetation (pp. 3-36 to 3-38)

1. Although the DEIS discussion of vegetation notes that the Town Natural Resources Inventory describes two predominant types of vegetational communities in the Town, it is recommended that the FEIS also provide a comparison of the plant communities on the site with those in the book entitled Ecological Communities of New York State by Carol Reschke which was published in March of 1990 by the New York Natural Heritage Program part of NYSDEC. This publication provides a precise breakdown and definition of vegetational communities and further categorizes the deciduous hardwood forest and oak-pine forest types found on the project site.
2. It should be noted that a number of plant species found on the site are classified as "exploitably vulnerable" under 6 NYCRR 193.3. These species are:

American bittersweet
spotted wintergreen
trailing arbutus

3. In a review of the plant species observed on the site, it is noted that two rare plant species, as defined by the State in 6NYCRR 193.3(e), were listed in Table 3-17 on page 2 of 3 as being either on the facility site or in the surrounding area. The location of these two species, Stueve's bush clover (Lespedeza stuevei) and Nuttall's lobelia (Lobelia nuttalli), should be provided in the FEIS both on a map and in the text and it is recommended every effort should be made to preserve them. It is noted that for the lobelia

the species name is not provided although the common name is confirmed. Accordingly, this should be corrected.

4. On pages 1 of 3 and 2 of 3 of Table 3-17, several species were observed on the site for which the genus is identified but not the species. Several of these genera have species which are listed by the State as either being endangered, threatened or rare. These are as follows:

milkweed	-	Asclepias spp.
white aster	-	Aster spp.
Carex	-	Carex spp.
tick-trefoil	-	Desmodium spp.
Equisetum	-	Equisetum spp.
smartweed	-	Polygonum spp.
cinquefoil	-	Potentilla spp.
goldenrod	-	Solidago spp.

It is suggested that every effort be made to identify these plants to the species level in order to confirm that they are or are not endangered, threatened or rare. To assist in this endeavor, the field biologist who observed these plants may either wish to send samples to the New York State Botanist for identification or contact the New York Natural Heritage Program. If any of these are confirmed as endangered, threatened or rare it is recommended their location be provided in the FEIS both on a map and in the text and effort made, if possible, to preserve them.

3.4.2. Wildlife (pp. 3-38 to 3-42)

1. It is recommended that more detail be provided in regard to wildlife including information on the abundance of species observed and distribution over the site of species. In addition, it is recommended that the specific habitat requirements and behavioral aspects of the following observed species be provided in the FEIS in narrative form to provide for a more comprehensive review:

- a. red-tailed hawk
- b. turkey vulture
- c. killdeer
- d. Northern bobwhite
- e. prairie warbler
- f. yellow warbler
- g. black-throated green warbler
- h. barn swallow
- i. wood thrush
- j. Carolina wren
- k. brown thrasher
- l. Canada warbler

2. On page 2 of 2 of Table 3-23, the American toad is listed as a species observed on the site. However, our Division's own field observations along with information obtained from other agencies and private local ecological organizations indicates that the American toad is not found on Long Island whereas the species observed was more likely the Fowler's toad. Accordingly, this observation should be confirmed.

3.4.3 Significant Habitats (pp. 3-38 to 3-42)

1. In the discussion of "Endangered, Threatened, and Special Concern Species" on pages 3-38 and 3-39, the DEIS references a list of rare plants found in the Town of Brookhaven which were included in the Town Natural Resources Inventory and shown in Table 3-24 of the DEIS. The DEIS states that "...no regulatory status (i.e. state protection) is affiliated with the Town designation." This is a misinterpretation of the information provided in the Natural Resources Inventory. This list is not of species designated by the Town as rare, but is a list of New York State-designated endangered, threatened or rare plants which happen to occur in the Town of Brookhaven. Therefore, in contrast to the comment in the DEIS, these species do have state protection under 6NYCRR 193.3. The DEIS also states on page 3-39 that "Many of these species, while being considered rare on Long Island, have secure populations throughout other areas of their range." This is incorrect - because these species have been given State designation as either endangered, threatened or rare, it means they are endangered, threatened or rare throughout New York State, not just on Long Island. Accordingly, these statements should be corrected in the FEIS.

4 POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION (pp. 4-1 to 4-33)

4.2.1.2 Groundwater Quality (pp. 4-4 to 4-5)

1. It is recommended the FEIS discuss the track record of the proposed liner and leachate collection system in withstanding leaks and eventual groundwater contamination.
2. In the second-to-last paragraph of this section, the DEIS states the "...potential impact to the existing groundwater quality is limited" because existing groundwater quality has already been impacted by the existing landfill. This statement is questioned because it appears to discount the seriousness of any groundwater contamination. It is recommended this statement be removed from the FEIS.

3. It is recommended consideration be given to providing more detail in regard to potential groundwater contamination of groundwater. Based on past experience, this information could include rates of leakage, rate of flow of contaminants and potential concentrations of contaminants.
4. In the last paragraph of this section on page 4-5, the DEIS states that groundwater monitoring wells will be sampled. It is recommended the FEIS indicate how often and at what times of year the wells will be sampled.
5. On page 4-5 the DEIS states refers to "...anticipated leakage rates..." for the proposed containment system. Is it expected there will be some leakage from the liner/leachate containment system and if so what are the anticipated numerical rates?

4.2.3 Wetlands (p. 4-7)

1. As noted under previous comments for Section 3.2.3, it should be noted that the wetlands discussed in this section are also regulated by the Town of Brookhaven under Chapter 81 of the Town Code and that freshwater wetlands extend further north than is shown in Figure 3-23. Accordingly, it is recommended this be noted in the FEIS.

4.3.2 Air Quality (pp. 4-8 to 4-15)

1. On pages 4-8 to 4-9 the, the DEIS discusses the control of dust with water and with the prompt planting of new vegetation under the "Construction" subsection. However, how will this be accomplished during freezing and subfreezing temperature conditions and during periods of the year when plant growth and establishment cannot occur?
2. In consideration of the height of the proposed Cell 5 and the potential for the development of moderate to high winds, will any modeling be done to confirm that these factors will not transport fugitive dust and other airborne contaminants to areas containing sensitive receptors? In addition, have any tests been conducted to determine if airborne materials released at the top of the landfill have been detected downwind in areas of sensitive receptors?
3. In the discussion of references by MRI and Hahn concerning fugitive ash emissions on pages 4-11 to 4-15, it is suggested that more information from these studies be provided in the FEIS to determine their relevancy and similarity to conditions at

the proposed Cell 5. It is suggested that a synopsis of these studies should note the source and type of ash (e.g. municipal, etc.) studied, the volumes involved, the climatological conditions, operational conditions, methodologies used to study potential ash dust release, etc.

4. In the second paragraph on page 4-14, the DEIS states that "...many of the assumptions that are integral to the MRI model are not applicable to the Landfill Expansion Area project." It is suggested that the FEIS outline and explain the specific aspects of the MRI model which are not comparable to the Cell 5 scenario.
5. In the third paragraph on page 4-14, the DEIS refers to "AP-42 emission calculations." It is suggested that these calculations and their relevance to Cell 5 be explained for the layman.
6. In the last paragraph of the Air Quality section on page 4-15, the DEIS states that the existing landfill has been receiving ERF ash for one year and that "...significant fugitive dust impacts..." are not created. Have any air quality sampling studies been conducted during this time to confirm this conclusion or are there other studies on which this is based?

Ecological Resources (pp. 4-15 to 4-4-18)

4.4.1 Vegetation (pp. 4-15 to 4-16)

1. As stated in previous comments on the Environmental Setting section, in a review of the plant species observed on the site, it is noted that two rare plant species, as defined by the State in 6NYCRR 193.3(e), were listed as being either on the facility site or in the surrounding area. The location of these two species, Stueve's bush clover (Lespedeza stuevei) and Nuttall's lobelia (Lobelia nuttalli), should be provided in the FEIS both on a map and in the text. It is recommended that potential adverse environmental impacts to these species should be discussed.
2. As stated previously several species were observed on the site for which the genus is identified but not the species. Several of these genera have species which are listed by the State as either being endangered, threatened or rare. It is suggested that potential impacts to these specific plants be discussed in the FEIS.

4.4.2. Wildlife (pp. 4-16 to 4-17)

1. It is recommended that a detailed discussion of potential adverse environmental impacts to the following species be provided in the FEIS:
 - a. red-tailed hawk
 - b. turkey vulture
 - c. killdeer
 - d. Northern bobwhite
 - e. prairie warbler
 - f. yellow warbler
 - g. black-throated green warbler
 - h. barn swallow
 - i. wood thrush
 - j. Carolina wren
 - k. brown thrasher
 - l. Canada warbler

2. On page 4-17, the DEIS states that affected species are capable of relocating to adjacent undisturbed properties. However, this conclusion does not consider that most ecological studies on Long Island are based on the assumption that all habitat areas on Long Island are at carrying capacity for all ecological niches. Based on this factor, even if some individuals relocated to adjacent areas, this would still result in a population decline due to the lack of sufficient niches to accommodate all displaced animals. Accordingly, it is recommended the FEIS discuss this factor.

3. In the last paragraph of this section, the DEIS states that the revegetated landfill cover will "...provide nesting and foraging habitat for passerines, waterfowl and small mammals..." and will be used by raptors for hunting. It is recommended that supporting references and documentation be provided in the FEIS to confirm these conclusions. In addition, if no man-made surface water bodies are proposed for the area, it is unclear how habitat will be provided for waterfowl on the site. In addition, the FEIS should indicate for what species the revegetation will be of benefit.

4.4.3 Significant Habitats (p. 4-18)

1. In the discussion of provided on page 4-18, the DEIS states that no endangered, threatened, and rare species have been noted on the site. However, as was noted previously under discussions of vegetation, the DEIS has noted that rare and/or endangered plant species have been found on the site. Accordingly, this statement should be corrected.

5 MITIGATION MEASURES TO MINIMIZE OR AVOID ENVIRONMENTAL IMPACTS (pp. 5-1 to 5-7)

5.2 Description of Mitigative Measures (pp. 5-1 to 5-7)

Change in Topography/Increased Elevation/Visual and Aesthetics (p. 5-1)

1. In consideration of the fact that a 500-foot-wide buffer of existing natural vegetation is to be preserved on the west side of Cell 5, it is recommended that consideration be given to ensuring the preservation of another buffer of existing natural vegetation on the south side of Cell 5 to help to protect views from Sunrise Highway and to help to minimize potential visual impacts to future residents of the currently vacant residentially-zoned area located just south of Sunrise Highway. If possible, a buffer width of 100 feet should be maintained in this area wherever feasible.

Air Quality Impacts (pp. 5-4 to 5-5)

1. Will any consideration be given to periodic air quality monitoring downwind of and adjacent to the working face of Cell 5, such as for aerosols, microscopic particulates and so forth? Perhaps this can be considered as an additional mitigation measure.

Ecological/Vegetation Impacts/Wildlife Habitat (p. 5-5)

1. As noted previously, a number of rare plants have been noted on or adjacent to the project site. If these plants are located in areas to be disturbed, it is recommended that consideration be given to attempting to transplant these to other areas of the site which will never be disturbed and to providing for the care of these plants after transplantation.
2. In the eventual revegetation of the site, it is recommended that an emphasis be placed on using native plant material and in gearing the revegetation to the re-creation of wildlife habitat which is most favorable to those wildlife species found in the area which are rare, forest-interior dependent, least tolerant of disturbance and area-sensitive. Emphasis should not be geared toward suburbanized, common species.

Thank you for this opportunity to comment on this DEIS. If you have any questions or need further information in regard to these comments, please feel free to contact me.

11-19-92

RECEIVED
92 NOV 23 AM 11: 51.
OFFICE OF THE TOWNSHIP SUPERVISOR
TOWNSHIP OF BROOKHAVEN

Dear Supervisor LaMura,

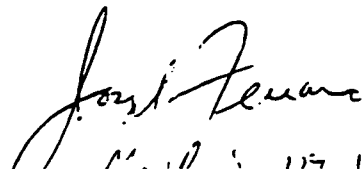
I am appauled that the Town of Brookhaven has called a town meeting to voice opposition to the extension of the Brookhaven Land Fill in mid November, while work on the project had started last summer. Also a 12-4-92 deadline for written appeals must be some sort of joke. Why on earth have the meeting or accept written appeals, if this project is already in the works?!. We people of Brookhaven Township are tired of screw up after screw up. Were tired of being Railroaded by our elected officials. We don't want another dump! The one we have had to live with for all these years was supposed to be capped and closed by now!. Where do you get off opening another one. And why were you not at that farce of a meeting?. Were you afraid to face the people surrounding the landfill thats been screwed over so many times?. There is no need to open a Landfill so close to people's homes. There are thousands and thousands of acres that are miles to the nearest homes that you can put this landfill. According to Commissioner Heil, it is enviromentally safe. If so--put it in the Pine Barrens where nobody has to live next door to it, if its so safe. And, if its not "so safe" for the Pine Barrens it's certainly not safe for us to live next door to it.

If you expect to get re-elected next year, you don't have a chance in hell unless you stop this project. We are tired of putting up with the towns continued ability to mismanage the affairs of the town and have little or no concern for its people.

Remember--no one wants or deserves to have a landfill in there backyard. We are not saying to put it in someone elses backyard. We are saying to put it miles (not 700 feet) away from peoples homes. We know we need to put garbage somewhere, but not within "Nose Shot" of it.

Do the Right Thing!

Sincerely, Joseph Ferraro



11-19-92

BROOKHAVEN VILLAGE ASSOCIATION, INC.
P.O. BOX 167, BROOKHAVEN, NEW YORK 11719

December 10, 1992

Dear Mr. Hart,

Enclosed is the information you requested
in your December 4, 1992 letter to include in
the Final EIS.

Sincerely,

Nicholas Delitto

NICHOLAS DELITTO

12-14-1992 11:07AM FROM

New York July 20, 1992

Study On Toxics And Birth Defects

Higher rate found near waste sites

By David Skowron
STAFF WRITER

Women living near hazardous-waste sites may face a small additional risk of bearing a child with a birth defect, according to a state study released yesterday.

But researchers said the study — one of the first in the nation to suggest a link between environment and congenital defects — did not establish a cause-and-effect relationship. State officials said they would investigate further, to see whether a chemical cause could be found for the increase.

"As we know at this point is that mothers living within a mile of a dump site have a small but statistically increased risk," said Edward F. Flanders, chief of the epidemiological studies section in the state Health Department. "But it does not mean they were exposed to contaminants. . . . I describe these findings as suggestive but by no means definitive."

The project by researchers at Yale University and the state Health Department analyzed birth certificates and records from the state congenital malformation registry. About 80 children per 1,000 live births in New York state as a whole were found to have major birth defects. But within a mile of a dump site the birth-defect rate was 84 per 1,000 births.

While this is very suggestive, it is premature to make definitive statements at this point," said Brenda A. Gendron, the study's principal author, who was a doctoral student when the project was undertaken. "We did not go into the mothers' homes and take samples of water and air. So although we knew they lived within a mile of the site, we don't know if their homes were at increased chemical exposure."

Gendron, now an environmental epidemiologist at the Reed Corp., a nonprofit research organization in Santa Monica, Calif., said follow-up studies are underway.

The Yale-New York study, published in the current issue of the *American Journal of Epidemiology*, looked at hazardous-waste sites in 80 New York counties and 87,115 births in those counties during 1983 and 1984. The study reviewed

CHILDREN BORN WITH DOWN'S SYNDROME AND OTHER ABNORMALITIES SUCH AS DOWN'S SYNDROME AND DIGESTIVE, MUSCULAR OR NERVOUS-SYSTEM ABNORMALITIES SUCH AS CYCLOPSIA. THE STUDY INCLUDED 64 DUMP SITES IN ILLINOIS COUNTY AND 28 IN SOUTHERN, ALL OF THEM INVESTIGATED AND NOT ACCEPTING ANY CRIME. THE STUDY CRITICIZED NEW YORK CITY BECAUSE THE CITY IS REALLY MORE DIVERSE THAN THE REST OF THE STATE. MAKING COMPARISONS WERE DIFFICULT. ALSO, THE CITY DID NOT LIST THE MOTHER'S ADDRESS ON BIRTH CERTIFICATES DURING THE TWO-YEAR STUDY PERIOD, MAKING IT IMPOSSIBLE TO LEARN HOW CLOSE TO A DUMP SITE A FAMILY LIVED, RESEARCHERS SAID.

The study also ranked waste sites, which varied widely in potential health risk, according to their potential for human exposure. Investigators did this by determining the toxic strength of the stored waste, how likely it was to contaminate air, water or soil, the proximity of the mothers' homes to the dump sites and the number of sites to which they were exposed. "Some women lived near up to 20 sites," Cooperwind said.

...the highest hazardous ranking were

12.3.92

Po Box 608

RECEIVED

Brookhaven, NY 11719

92 DEC -7 AM 10:12

OFFICE OF THE SUPERVISOR
TOWN OF BROOKHAVEN

Town Hall

3233 Rte 112

Medford, NY

Dear Mr. Supervisor

I was raised in Brookhaven Hamlet. Brookhaven has always been HOME to me. I went to school here and I raised my kids here. My roots are deep in Brookhaven.

Last few years I've started having nightmares...Apocalyptic-type nightmares where the world isn't right anymore. I have them frequently. Some people say I won't be able to continue using my well water. Jim Heil has said not to worry about it. The Water Authority is coming down our Lane soon, but I'm not ready to pay for water. That seems an unreasonable sacrifice for someone who's always had good well-water to suddenly be

threatened with a promise of a "cheap" hookup, only to be trapped into more bills. If my water goes bad, I'll blame it on the unsanitary landfill and the Town of Brookhaven can provide me with free water. I've paid enough already.

I always slept with my window open to the clean night air. Do you realize what it's like to smell the rancid sour stench of landfill every night? No wonder I get nightmares! I used to irrigate a three-acre produce garden. Will I be able to afford that on City water?

And now we're being force fed another possible 18 years with Cell 5 and who knows how many more cells. Why here? How did this lovely little Hamlet of Brookhaven deserve such a trashing. What would my grandfather say? Perhaps he'd tell me to leave my friends and familiar surroundings. I don't think you'll ever realize how

Sad this makes me.

The leadership provided by the Town has been deplorably lacking. There's been no implementation of a "Don't Bag It" program for collection of yard wastes, there's been no recycling for commercial wastes, the entire recycling program has been thwarted by the monstrous appetite of the ill-conceived incinerators in Hempstead.

I vote for a decentralization of GARBAGE. Big garbage = BIG Corruption. Every street and community should get involved in some degree of responsibility - be it recycling and composting or whatever. When is Long Island going to wake up to the fact that we're soiling our only reservoir? But surely someone else will be in office when that comes out.

Please close the landfill down. Sincerely
Jennifer Clement

18 Old Barts Rd.
Brookhaven, N.Y. 11719
Dec. 1, 1992

Mr. James Heil
Dept. of Waste Management
Brookhaven Townhall
Madison, N.Y. 11750

Dear Mr. Heil,

My family and I spent a lovely Thanksgiving holiday in Fla. We came home Sunday night to the horrible stench. The stench was particularly bad!! Today, it is Tuesday, Dec. 2, 1992, and it still smells very, very bad!! The stench has gotten worse!! What kind of incompetent official are you? What kind of Monster are you to create this horrible smell? You have no control of the problem! You are an uncaring, perhaps corrupt public official and you have ruined my well-being and happiness. You have ruined my homelife. I will never support you or any of your projects. To me, you are a heartless callow creature, unworthy of public trust.

Unhappily yours,

Ms. Sally Petta
18 Old Barts Rd.
Brookhaven, N.Y. 11719

The Town Supervisor's office received 405 letters from students at the Hampton Avenue School. Each of these letters is summarized in the attached listing. The original letters are on file and available for inspection at the Department of Waste Management offices.

LANDFILL EXPANSION PROJECT · LETTERS FROM STUDENTS OF
HAMPTON AVE SCHOOL, BELLPORT.

<u>STUDENT'S NAME:</u>	<u>COMMENT.</u>
1. KRISTEN BUETI	NATIVE AMERICAN PRAYER, CAUSING SICKNESS.
2. DARSHAUN THOMAS	SMELL.
3. APRIL SCHEIBEL	TOXIC ASH, SMELL
4. KEZRY LAYDEN	SICK
5. DENISE PAPALCO	SMELL.
6. DANNY FOISSETT	SMELL, NO SKI SLOPE.
7. CARLOS CURBELO	ASH, SMELL, DRINKING WATER.
8. SHANNON MARIE HUGHES	ASH, HEALTH.
9. JESSICA JOSE	LEAD, ASH
10. CRAZE BARNARD	SMELL, HEALTH
11. DANIELLE RUSSO	ASH, LEAD
12. MIKE JOHNSON	ASH
13. MICHELLE PERRI	SMELL, AIR POLLUTION, HEALTH.
14. AMALIA DAMIAN	SMELL, AIR POLLUTION, WATER, RECYCLING.
15. MARGARET ERMA	AIR POLLUTION, SMELL
16. JESSICA COPPEL	SMELL, HEALTH
17. DANNY FINN	ASH, LEAD, SMELL.
18. BILLY BRISCOE	SMELL, ASH, LEAD
19. MELISSA MIRABELLI	WATER QUALITY, ASH, LEAD
20. SCOTT JONES	SMELL, ASH, LEAD.
21. ELIZABETH HARRISON	SMELL, ASH, LEAD, WATER.
22. LORI ANN WERKMEISTER.	SMELL, ASH

STREET NAME	Comments
24 SHAREE BINGGARD	SMELL, ASH, WATER, RECYCLE
25 INGUELINE FIANCISI	ASH, RECYCLE, WATER
26 Alex Kramer	KIVER, RECYCLE
27 Patricia Boykid	AIR POLLUTION
28 Jason Fox	Iron mechanical, WATER, ASH
29 Ryan Stewart	ASH, SMELL, DUST
30 Derek Luck	WATER, ASH
31 Muhammad Ali	SMELL, ASH, WATER
32 BRISUNE TISON	SMELL, ASH, LEAD
33 ANDREY BLESSINGER	HERBIV
34 TILIAN WALLEN	SMELL, HERBIV
35 KELLY WHITE	SMELL
36 VICKY BUNARDI	HERBIV
37 Jason Fiorelo	SMELL
38 CHRIST CHASANNIA WELKS	SMELL, FINE, LITTER
39 ROBERT GILES	SMELL, HERBIV
40 SHYAMA WICKENBARRATSI	OZONE, SAVE THE EARTH, HERBIV
41 KATIE VINE	SMELL
42 ANDREA NICOLE CHIRBARD	HERBIV, ASH
43 DARLISH ASKARI POOR	PIE POLKUTON, LEAD, SMELL, "PACH"
44 LASHAUE Mc MILLAN	SMELL, HERBIV
45 TIMMY KELLY	SMELL, HERBIV
46 NIKKIA WASHINGTON	ASH, AIR POLLUTION, RECYCLE
47 ROBERT ROSENBLAS	HERBIV
48 MARIE HARTER	WATER, LEAD
49 FARLYAH RAHEEM	SMELL, LEAD, HERBIV

	<u>STUDENT'S NAME</u>	<u>COMMENT</u>
51	ANGELA SASSO	SMELL, LEAD, HEALTHY
52	BRIAN WEISS	LEAD, ASH, HEALTHY
53	JACQUELINE PIZZA	HEALTHY, ASH, WATER
54	SARAH Y. T. REOY	SMELL
55	MIKE DI DIO	ASH, SMELL
56	CRISTEL HENKEN	SMELL, LEAD
57	JOEY PALO	SMELL
58	TABATHA BRISCOE	ASH, WATER
59	PAUL DIETZEL	SMELL
60	KEVIN O'DONNELL	SMELL, ASH, LEAD
61	MARCELA DIAZ GRANADOS	SMELL, HEALTHY, LEAD
62	CARROL	SMELL, AIR POLLUTION
63	KELLY DANNELLY	ASH, SMELL
64	MARIE D. CARO	SMELL
65	NOAH CARDAMONS	SMELL, SEAGULLS
66	JAMES TRAMONTANO	AIR POLLUTION, SMELL, LEAD, WATER
67	STEFANIE SCHILERO	SMELL
68	KERRY MOHLMANN	SMELL, WATER
69	CYNTHIA ZAGORSKI	SMELL, SEAGULLS, LEAD
70	LORINDA BULLOCK	SMELL, FUTURE
71	JUSTIN HALPIN	SMELL, LEAD, SEAGULLS
72	TRONIKA WHITE	SMELL, WATER
73	WAYNE HENGER, JR.	SMELL, HEALTHY, WATER
74	JACQUELINA GUTIERREY	SMELL, HEALTHY, WATER
75	JASON LOPEZ	SMELL, LEAD
76	JAMIELEE SPINELLI	SMELL, HEALTHY

<u>STUDENT'S NAME</u>	<u>COMMENTS</u>
78 CHRISTOPHER CIALASSO	HEALTH, LEAD, ASH
79 KYLE ARDEN	ASH, LEAD, SMELL, WATER
80 CARLA MARIE ARMENIA	SMELL, ASH, WATER.
81 KIM BERNARD	HEALTH.
82 BRENDAN MC CLARION	ASH, LEAD, SMELL.
83 BOBBY KAVATHAS	SMELL, RECYCLE, DONT SAG IT
84 JENNIFER ZENCEL	LEAD, SMELL, WATER, RECYCLE
85 SUSAN VASQUEY	SMELL, SOIL, TOXIC, WATER.
86 MAYA SHARAN	SMELL, RECYCLING, WATER.
87 KELLY ANN HOCK.	ASH, LEAD, WATER, SMELL.
88 ROBERT BUNDRICK.	GOOD / BAD, SMELL.
89 GREGG GIANNOTTI.	SMELL, DONT NEED CELL.
90 DEANIN MORRISON	SMELL, ASH.
91 AIESHA MORNING	SMELL, ASH, LEAD, RECYCLE.
92 TARA JONES	SMELL, ASH, WATER, RECYCLE
93 MICHELLE CALABRESE	ASH, LEAD, SMELL.
94 ELIZABETH GASSNER.	SMELL, ASH, RECYCLE.
95 SHAUNNALEE SMITH	SMELL, RECYCLE, DONT SAG IT, ASH.
96 MATTHEW QUINN	ASH, LEAD, WATER, RECYCLE
97 BERTHA MAYO	HEALTH
98 CATHERINE, FRANCES, SALVATORE, JEANNA RAPISARDI	ASH, WATER.
99 ERIN FEYN	SEAGULLS, LITTER, WATER, AIR, HEALTH
100 ANGELA ABAZIS.	ODOR, SEAGULLS
101 ALLYSON PETROSKY	ODOR LATER, SMELL, HEALTH
102 IRINA KOVALENKO	AIR POLLUTION, SEAGULLS, HEALTH.
103 TIFFANY ANDERSON	HEALTH.

	<u>STUDENTS NAME</u>	<u>COMMENT</u>
159	ENEIDA FIGUEROA	HEALTH, WATER, TOXIC WASTE, SMELL
160	NIESHA	LEAD
161	MERYL DEL ROSARIO	HEALTH, ODOUR, ASH
162	HINDU PRIVOTT	POLLUTION, WATER, HEALTH
163	RYAN PILGER	SMELL, ODOUR
164	NICOLE BISCARDY	SMELL, HEALTH, ASH, TOXIC, WATER
165	ALICIA PALLADINO	HEALTH, ODOUR
166	DARREL BROWN	WATER
167	DAVID HARROW	SMELL, LEAD
168	CELESTE SIMONE	SMELL, HEALTH, POLLUTE
169	TRAVIS RODGERS	SMELL, ASH
170	PARWANA CIMINZADA	LEAD, ASH, HEALTH
171	NEAL HEATON	ASH, LEAD, SMELL, WATER
172	CHRISTOPHER TULLON	ASH, LEAD, WATER
173	ALEXANDRA MASEA	SMELL, ASH, RECYCLE, DON'T SMELL
174	JENNIFER CONNELLY	SMELL, ASH, HEALTH
175	JAMES MARTENS	HEALTH, WATER
176	JANILE GALAFALO	SMELL, RECYCLE
177	CHRISTINA QUIRKE	FIGHT AGAINST SMELL, ODOUR, WATER, REC
178	LAUREN CAPRIODGLIO	SMELL, ASH, LEAD, RECYCLE, WATER
179	SEENA DANIELS	SMELL
180	FELIX GRUCCI III	FIGHT AGAINST, WATER, ASH, SMELL
181	CASSANDRA RATR	HEALTH
182	JESSICA GROSSART	HEALTH
183	ANGELA QUARTUCCIO	SMELL, HEALTH
184	YOLAILA MALDONADO	INCINERATION

	<u>STUDENTS NAME</u>	<u>COMMENT</u>
186	DOMINICK ROBERTI	HEALTHY, SMELL
187	CLIFFORD ANDREA	SMELL, POLLUTION
188	MICHAEL CALIENDO	ASH, WATER, SMELL
189	RYAN WALTER	ASH, WATER, SMELL
190	JUSTIN SUNDERLAND	SMELL, LEAD, RECYCLE
191	ERIC AUSTER	SMELL, ASH, LEAD, RECYCLE
192	ANTHONY DELIMITIOS	SMELL, RECYCLE, AIR LEAD, LINEN
193	KATHERINE O'CONNOR	SMELL
194	RON GROSSART	AIR POLLUTE, ASH, LEAD, WATER
195	CARTER COLEMAN	SMELL, ASH, LEAD, WATER
196	ALIETRA DAVIS	SMELL, ASH, LEAD, LINEN, RECYCLE
197	TILL DI NICOLA	SMELL, ASH, LEAD, LINEN, RECYCLE
198	CRYSTAL JONES	ASH, SMELL, WATER
199	LYNANC HOLMES	SMELL, ASH
200	KATE ROTHAUS	ASH, LEAD, DIRT/SALT
201	CAROLINA NUNEZ	ASH, LEAD, SMELL
202	LETITIO UEMEISTER	SMELL, POISON
203	VANESSA BEATIFORE	SMELL, LEAK, HEALTH
204	MARLENE SONDOS	SMELL, ASH, LEAD, WATER
205	BRIAN TIMONEY	SMELL, LEAK, WATER
206	AGATHA EMMETT	SMELL, LEAD, WATER
207	LAUREN FIORE	SMELL, LEAD, HEALTH, WATER
208	JOE CAUNAGH	SMELL, ASH, LEAD, TOXIC WASTE
209	MEGGAN MURPHY	SMELL, LEAD, WATER
210	TINA JONES	SMELL, LEAD, ASH, WATER
211	ROBERT DUNBAR	SMELL, ASH

	<u>STUDENTS NAME</u>	<u>COMMENTS</u>	
213	JUSTIN FRAGG	ASH, TOXIC, LEAD	
214	PAUL G	LEAD, SMELL, WATER, LEAD	
215	LORI KREAMEL	SMELL, ASH, LEAD	
216	BRANDON	SMELL, ASH, LEAD	
217	MERCEDES DILONE	SMELL, ASH	
218	CRISTINA FELICIANO	LEAD, SMELLS	
219	IVAN FORRES	WATER, LEAD	
220	DEON SMITH	SMELL, TOXIC, LEAD, WATER	
221	BILLY HARDY	LEAD SMELL, HEALTH	} SAME LET
222	LOREN SWEET	SMELL	
223	CRAIG CLARK	SMELL, HEALTH	
224	JUSTIN HILLMAN	SMELL	
225	DAVID OROZA	SMELL	
226	JOSEPH DAWSON	SMELL, HEALTH	
227	SZEWA MOY	SMELL, HEALTH	
228	TIMMY JAMES KOCHER	SMELL, HEALTH	
229	SEAN MANNING	SMELL, HEALTH	
230	MATTHEW GILFER	SMELL, HEALTH, WATER, BACTERIA	
231	SUSAN DUBIAS	SMELL, HEALTH	} SAME LETTER
232	MAX ROTHAUZ	SMELL HEALTH	
233	KRISTEN CHERLEB	SMELL HEALTH	
234	DAVID EATON JR	SMELL HEALTH	
235	BILLY PARENTE	SMELL HEALTH	
236	BRIAN MASEM	SMELL HEALTH	
237	PATLICA SINGLETON	SMELL HEALTH	
238	MARIO RODRIGUES	SMELL HEALTH	

	<u>STUDENTS NAME</u>	<u>COMMENT.</u>
240	MUNIQUE ANDERSON	SMELL, HEALTHY.
241	JOEY MANTLE	SMELL HEALTHY.
242	NAOMI DUNN	SMELL HEALTHY.
243	CRYSTAL GORDON	SMELL, HEALTHY.
244	MATT STEFFENS	SMELL.
245	BRETT PENFOLD	SMELL, LEAD.
246	ALICIA GERIG	SMELL.
247	JUAN GONZALEZ	SMELL
248	MARC CAROLI	SMELL.
249	MARK BENEDEUCCI	SMELL
250	MAXINE SANCHEZ	SMELL
251	JEFFREY TSE	SMELL
252	DARVIRN LAZO	SMELL.
253	NICHOLAS MONETTI	SMELL
254	CINDI MARTIN	SMELL.
255	JESSICA ECHEVARRIA	SMELL, HEALTHY.
256	JOHN FRILIKSEN	SMELL, HEALTHY.
257	KENISHA LEDTAUC	SMELL HEALTHY
258	TANISHA CARPENTER	SMELL, POLLUTION.
259	TONI LYNN TRAMONTANO	SMELL, HEALTHY
260	CHARLOTTE FLEMING	SMELL, HEALTHY
261	AIMEE RUDD	SMELL.
262	ERICA LAZAROW	SMELL, HEALTHY
263	KARI BALATI	SMELL HEALTHY
264	JAMES DUNN	SMELL
265	PATRICK STANLEY	SMELL, WATER.

	<u>STUDENTS NAME</u>	<u>COMMENT</u>
321	NITI KUMAR.	SMELL, HEALTH
322	SCOTT MOSBY	SMELL.
323	DANIELLE ALLEN	SMELL, HEALTH.
324	JUSTIN MUKSENARN	TOXIC WASTE, HEALTH.
325	ERIN DUNBAR	SMELL.
326	DAISY RODRIGUEZ	POLLUTION, ASH.
327	AMY KANOWITZ	LEAD, SMELL.
328	(UNSIGNED)	HEALTH, POLLUTION.
329	MELISSA WEBER	TOXIC WASTE.
330	CASSIE GRUERING	LEAD, HEALTH.
331	CARRIE	SMELL, WATER.
332	PHILIP GALLO	LEAD, SMELL.
333	SEAN VAZ	SMELL.
334	STEPHEN GALLO	HEALTH.
335	JEWELLE MALCOLM	HEALTH, SMELL.
336	RISHI SHRIVASTAZIA	TOXIC WASTE, HEALTH.
337	DAVID GASSICK	ASH, WATER, POLLUTION.
338	ALEXANDER ROBBINS	OZONE.
339	AMANDA MOORE	ENVIRONMENT.
340	MELANIE FAULKNER	SMELL, ENVIRONMENT.
341	AMINE MANN	ASH, RECYCLE.
342	SHEENA REVE	FIGHT AGAINST, HEALTH, LEAD, WATER.
343	LUZ VAZQUEZ	ASH, LEAD, RECYCLE, SMELL.
344	JESSE ROMAN	ASH LEAD WATER RECYCLE.
345	DONNA MILLER	HEALTH.
346	BRYNN ZALEWSKI	ASH, LEAD WATER, SMELL.

	<u>STUDENTS NAME</u>	<u>COMMENT</u>
294	TINELLE EVANS	LEAD
295	LINDSEY BENJAMIN	WATER, POISON
294	KYLE MOODT	SMELL
297	MEAGHAN SHANNON	TREES,
298	VICKIANA FRANCO	LEAD
299	DENISE PALERMO	SMELL, HEALTH.
300	JONTUE TURNER	HEALTH.
301	TIMOTHY SWEENEY	ASH, SMELL, LEAD, WATER.
302	EARL WALLACE	SMELL
303	DAVID KESSLER	SMELL
304	ANNA WYCRALIERSKA	POLLUTION
305	ERIKA EDWARDS	HEALTH
306	JANERIA HARDY	COMPOST
307	DAVID BROWN	SMELL, GERMS.
308	CHARMAINE WEBER	LEAD, ASH, HEALTH.
309	HADIYA KIRKLAND	LEAD
310	DOMINICK MERCURIO	SMELL, LEAD
311	ASHLEY DANSON	HEALTH
312	ERIC TELKORISH	HEALTH
313	NICHOLAS RHINGGOLD	SMELL
314	JACKIE CULLEN	PRO & CON, SMELL
315	MATT FARBER	SMELL, ASH, LEAD, DEAD ANIMAL
316	DAVID	SMELL, WATER
317	CARIS HARVEY	SMELL
318	MATTHEW WILLIAMS	SMELL, DEAD ANIMALS, WATER.
319	RYAN SMITH	WATER, SMELL, PARK.

	<u>STUDENTS NAME</u>	<u>COMMENT</u>
267	MATT CHIMINO	MONEY
268	MAGGIE GOULD	SMELL, ASH, MONEY, 20 YEARS
269	JENNIFER PISANI	TOXIC SMELL, MONEY
270	MICHELE BURKE	SMELL, ASH, WATER, 20 YEAR
271	KAREN AQUILAR	SMELL, HEALTH, 20 YEAR
272	MICHELLE CASE	RECYCLING, ASH, SMELL, 20 YEAR
273	MILE VALE	SMELL, ASH, MONEY
274	SAIAH KANE	MONEY, 20 YEAR
275	NATASHA JACKSON	SMELL
276	CRYSTAL GRIFFIN	SMELL, ASH 20 YEAR, MONEY
277	CHRISTINA ROSARD	SMELL
278	NATHANIEL BRADY	20 YEAR, ASH, WATER, SMELL
279	BLAIRE ELIZABETH MAC DONALD	SMELL, ASH, WATER, 20 YEAR
280	DANNY SEGA	ASH, SMELL, 20 YEAR
281	JESSICA DRAGO	SMELL, ASH,
282	ROBERT SHEULIN	ASH, 20 YEAR
283	MAX ANNIS	ASH WATER, 20 YEAR, MONEY
284	ROBERT HALVERSON	ASH, WATER, SMELL
285	ISAIAH GRIGG	SMELLS ASH, WATER, APPEARANCE
286	JAREO MASEM	ASH,
287	GRAIG GIULIANI	LEAD
288	MARGARET GOODMAN	NO VOTES
289	CHRISTINE BISIGNANI	LEAD, SMELL, ASH
290	MATTHEW WOHLLEB	ASH
291	JULIETTE Mc PIAT	EQUIPMENT, RECYCLING
292	MICHAEL RIVERA	ASH

	<u>STUDENTS NAME</u>	<u>COMMENT</u>
348	ERIC VENTIERE	WATER, ASH
349	JANICE NOLAN	HEALTHY.
350	MARY STAFFA	SMELL, WATER.
351	VINCENT DE LISI	ASH
352	DANIELLE MAY HOWARD	SMELL.
353	LAUREN LONEY	WATER, LITTER, SMELL
354	LAUREN ROBERTS	ASH, WATER, RECYCLE
355	APRIL CONTI	SMELL, ASH, RECYCLE
356	ALFREDO MORIVA, JR.	POLLUTION, NATIVE AMERICAN PRAYER.
357	DANIEL ROBERTS	SMELL, HEALTHY. PRAYER.
358	STEPHEN DEANER	SMELL, ASH, RECYCLE PRAYER.
359	CHRISTINE VIRGILIO	ASH, HEALTHY. PRAYER.
360	KRISTEN TARANTINO	SMELL, HEALTHY. PRAYER.
361	DOMINICK DE SIMONE	SMELL PRAYER.
362	MICHELLE BENINCASA	SMELL ASH PRAYER.
363	KIEOLA LEE	SMELL, PRAYER
364	CRYSTAL MAC DONALD	SMELL, HEALTHY. PRAYER.
365	MARIBEL M.	SMELL. PRAYER.
366	GEORGE FLEAZER	SMELL, HEALTHY. PRAYER.
367	JONATHAN HAMO	HEALTHY PRAYER.
368	CHRISTAL TRALEY CAPERO	PRAYER.
369	JOSEPH SCIOLI JR	PRAYER.
370	ANN MARIE RUSSO	PRAYER. HEALTHY.
371	AZZIZI MORNING	SMELL, PRAYER.
372	STEPHEN RANDALL	PRAYER.
373	CRYSTAL MAC DONALD	PRAYER.

	<u>STUDENTS NAME</u>	<u>COMMENT.</u>
375.	BARBARA WINTER	SMELL
376	MELANIE WEIN.	SMELL.
377	JASON RENTKOWICZ	SMELL.
378	KEELY TESTER.	SMELL, HEALTH, WATER.
379	NINA PARRISH	SMELL, HEALTH
380	CHARLES DUNNINGER	SMELL
381	SEAN PENFOLD	SMELL, WATER, ASH
382	PIERRETTE BEGENT	SMELL.
383	(UNSIGNED)	SMELL, ASH, HEALTH
384	DAVID CHEVALIER	SMELL, ASH
385	STACY MURPHY	SMELL.
386	RALPH MACCHIA	SMELL, ASH LEAD
387	NICOLE FARIELLO	SMELL, LEAD
388	JAMIE FROCO	SMELL.
389	NORMAN	SMELL.
390	ANDREW MC LAURIN.	SMELL
391	ABIGAIL HASKELL	ENVIRONMENT
392	JOHN W. D. EVERITT	TOXIC ASH
393	NICOLE RUSSELL	SMELL, WATER.
394	NICOLE LE GETTE.	SMELL, HEALTH
395	HEIDI HIGGINS	PRAYER, STOP LANDFILL.
396	MRS PAUL MARTENS	HEALTH, WATER.
397	MR CHARLES ST ERYAN (TEACHER)	SMELL, ENVIRONMENT
398	J. R. SCHULTZ (TEACHER)	ENVIRONMENT, TOXIC
399	CLAIRE GOOD (TEACHER)	SMELL, WATER, HEALTH, RECYCLE
400	RONALD HANAK (TEACHER)	SMELL, ASH, LEAD, WATER, RECYCLE

STUDENTS NAME

COMMENT

402	EILEEN WHITE	SMELL, GOVERNMENT DIRECTION
403	RICHARD GREENWOOD	SMELL, SEWAGE, TOXIC ASH WA.
404	BRENDA SHARP (SCHOOL EMPLOYEE)	HEALTHY
405	BARBARA RUSSO (TEACHER)	SMELL, ALTERNATE...

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN
1992 NOV 23 AM 10:11

James Rathmann
115 Phyllis Drive
Patchogue, New York 11772

November 19, 1992

Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, New York 11763

Dear Mr. Heil:

There is no assurance that the new location at the landfill will not begin to leak and create further problems with groundwater therefore, my family and I oppose the opening of Cell Five at the Brookhaven Landfill.

Thank you.



James Rathmann

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

66

1992 NOV 23 AM 10:12

Ronnie Catalano
28 Gail Drive
Lake Ronkonkoma, New York 11779

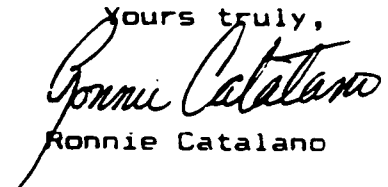
November 19, 1992

Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, New York 11763

Dear Mr. Heil:

The existing landfill is not properly managed and has caused the community extensive problems with odors, therefore, my family and I oppose the opening of Cell Five at the Brookhaven Landfill.

Yours truly,


Ronnie Catalano

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 NOV 23 AM 10:10

Vanessa Alvino
120 Tarpin Avenue
Medford, New York 11763

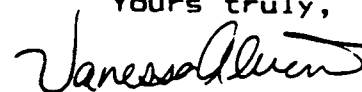
November 19, 1992

Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, N.Y. 11763

Dear Mr. Heil:

My family and I oppose the further development and opening of Cell Five at the Brookhaven Landfill. Thank you.

Yours truly,



Vanessa Alvino

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 NOV 23 AM 10:11

Darlene Alvino
218 Buffalo Avenue
Medford, New York 11763

November 19, 1992


Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, New York 11763

Dear Mr. Heil:

The dump is an eyesore; the proposed additional area is larger and will be higher and even more unsightly.

My family and I oppose the opening of Cell Five at the Brookhaven Landfill.

Yours truly,



Darlene Alvino

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 NOV 24 AM 9:46

John Armstrong
180 East Main Street
Patchogue, New York 11772

November 19, 1992

Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, New York 11763

Dear Mr. Heil:

The Town should consider implementing a commercial recycling program to minimize waste before it opens more landfill area since two thirds of the waste is created by businesses.

My family and I oppose the opening of Cell Five at the Brookhaven Landfill.

Yours truly,


John Armstrong

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

70

1992 NOV 23 AM 10: 11

Clarice Alviino
120 Tarpin Avenue
Medford, New York 11763

November 19, 1992

Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, New York 11763

Dear Mr. Heil:

It is unfair to burden the community of Brookhaven Hamlet (4% of the Town population) with all of the waste for our Town and for Huntington's ash.

My family and I oppose the opening of Cell Five at the Brookhaven Landfill.

Yours truly,

Clarice Alviino
Clarice Alviino



STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
VETERANS MEMORIAL HIGHWAY
HAUPPAUGE, N.Y. 11788

JAMES A. KUZLOSKI
REGIONAL DIRECTOR
October 30, 1992

FRANKLIN E. WHITE
COMMISSIONER

Honorable James Heil
Commissioner
Department of Waste Management
Town of Brookhaven
3233 Route 112
Medford, New York 11763

Dear Mr. Heil:

Proposed Landfill Expansion Project
Brookhaven, N.Y.

After receipt and review of the Draft Environmental Impact Statement prepared by Wehran Envirotech, Inc. dated October 1992, we concur that the traffic generated by this project will not affect New York State Routes 112, 27 and I495. As an involved agency, we are sending you this letter to act as a formal response to the Tuesday, November 10, 1992 public meeting to be held at the Brookhaven Town Office Complex, Route 112, Medford, New York.

If you have any further questions or seek additional assistance, please contact me directly at (516) 360-6108.

Very truly yours,

JOHN A. FALOTICO
Planning & Program Management Director

COUNTY OF SUFFOLK



ROBERT J. GAFFNEY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PLANNING

ARTHUR H. KUNZ
DIRECTOR OF PLANNING

October 28, 1992

Mr. James Heil, Commissioner
Town of Brookhaven Department of Waste Management
3233 Route 112
Medford, N. Y. 11763

RE: Proposed Landfill Expansion Project - Brookhaven, N. Y.

Dear Commissioner Heil:

The staff of this department has reviewed the above project and offer the following comments for your use.

The proposed landfill expansion is essential to the Town's management of its solid waste.

Regulations governing the design and operation of the facility are extremely protective of Long Island's ground and surface waters as well as its other environmental resources.

We do not envision any adverse impacts associated with the landfill expansion.

Furthermore, the DEC consent order requires the Town to implement its Solid Waste Management Plan of which this is a part. In addition, the trash for ash agreement with the Town of Hempstead requires Brookhaven to provide sufficient land disposal for the waste-to-energy facility residue. The proposed expansion will accommodate ash in separate cells as well as non-combustible residue from its MRF, residue from composting operations, some C & D waste and car shredding residue.

Yours truly,

Arthur H. Kunz
Director

AHK:pd

11719
Brookhaven Hwy
11 Old Route Rd
Brookhaven, N.Y.

Yours truly,

My family and I oppose the further development and opening
of Cell Five at the Brookhaven Landfill. Thank-you.

Dear Mr. Hell:

Mr. James Hell
Dept. of Waste Mgt.
Brookhaven Township
Medford, N.Y. 11761

Brookhaven, N.Y. 11710
Nov. 18, 1992

WASTE MANAGEMENT
TOWN OF BROOKHAVEN
1992 NOV 20 PM 3:52

RECEIVED
WASTE MANAGEMENT
TOWN OF BROOKHAVEN

1992 NOV 20 PM 3:50

Brookhaven, N.Y. 1171
Nov. 18, 1992

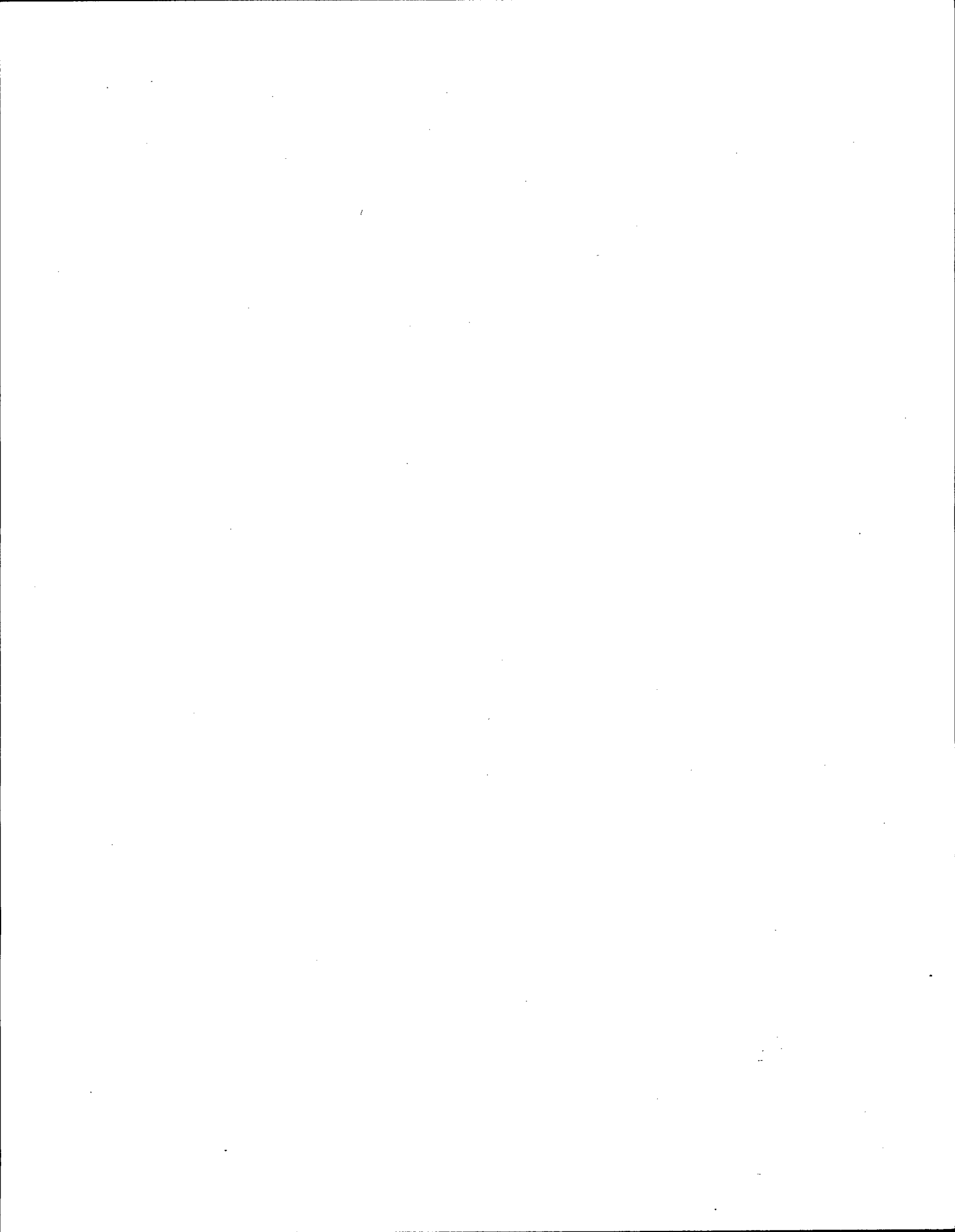
Mr. James Heil
Dept. of Waste Mgt.
Brookhaven Township
Medford, N.Y. 11763

Dear Mr. Heil,

My family and I oppose the further development and opening
of Cell Five at the Brookhaven Landfill. Thank-you.

Yours truly,
Mr. Louis Matrone
9 Old Barts Rd
Brookhaven, N.Y. 1171

**APPENDIX 3
INDEX TO COMMENTS**



APPENDIX 3
BROOKHAVEN LANDFILL EXPANSION FEIS
INDEX OF RESPONSES

ID #	NAME / ORGANIZATION / COMPANY	RESPONSE SECTION REFERENCE																				
		2.1.1	2.1.2	2.1.3	2.1.4	2.1.5	2.2.1	2.2.2	2.3.1	2.3.2	2.3.3	2.4	3.1	3.2.1	3.2.2	3.2.3	3.3	3.4	3.5	3.6.1	3.6.2	3.6.3
SPEAKERS AT PUBLIC HEARING																						
1	Elizabeth Gundlach	X																				
2	Amy Brock	X									X											
3	Rhonda Wiess									X			X	X								
4	Marilyn McKeown			X		X						X										
5	Falth McCutcheon	X									X	X										
6	Virginia Weston							X														
7	Steven Romalewski	X										X										
8	Dr. R. E. Watson				X		X			X												
9	Joop van der Grinten												X									
10	Mary Jo Farrell			X			X					X							X			
11	Debra Brown											X		X								
12	Lin Marie Dastis																					
13	Theresa Gelsmer												X									
14	Teresa Busardo												X									
15	Leslie O'Conner																					
16	Nanette Essel, Brookhaven Solid Waste Alternative Coalition											X	X									
17	Lillian DiPaula, Brookhaven Solid Waste Alternative Coalition		X				X	X		X												
18	Ralph Wall, Brookhaven Solid Waste Alternative Coalition																					
19	Erin Fehn																					
20	Claire Goad											X		X						X		
21	Thomas Ludlum, Brookhaven Village Association	X							X	X	X	X	X	X					X			
22	Tom Shannon																			X		
23	Toni Layden-Rodgers											X	X						X			
24	Arthur Governali, South Sungate Homeowners Association	X					X						X						X			
25	Jim Vaz, South Sungate Homeowners Association											X					X		X			
26	Jennifer Garcia																					
27	Walter Bundy											X										
28	Charles Stephani										X											
29	Hugo Giannotti											X		X								
30	Helen Pedigo											X										
31	Girl Scouts, Troop 1404 & 1668											X	X						X			
32	Dr. Robert Sack											X										

*This table
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rest of
document on*

**APPENDIX 3
BROOKHAVEN LANDFILL EXPANSION FEIS
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ID #	NAME / ORGANIZATION / COMPANY	RESPONSE SECTION REFERENCE																					
		4.1	4.2.1	4.2.2	5.0	6.1.1	6.1.2	6.2.1	6.2.2	6.2.3	6.2.4	6.2.5	6.3.1	6.3.2	6.3.3	6.3.4	6.3.5	6.3.6	7.1.1	7.1.2	7.2.1	7.2.2	7.2.3
SPEAKERS AT PUBLIC HEARING																							
1	Elizabeth Gundlach																						
2	Amy Brock	X			X																		
3	Rhonda Wiess																						
4	Marilyn McKeown		X			X		X															
5	Faith McCutcheon																						
6	Virginia Weston				X																		
7	Steven Romalewski																						
8	Dr. R. E. Watson																				X		
9	Joop van der Grinten														X						X	X	
10	Mary Jo Farrell				X					X	X												
11	Debra Brown							X													X		
12	Lin Marie Dastis								X														
13	Theresa Gelsmer																						
14	Teresa Busardo																						
15	Leslie O'Conner																						
16	Nanette Essel, Brookhaven Solid Waste Alternative Coalition				X												X						
17	Lillian DiPaula, Brookhaven Solid Waste Alternative Coalition	X	X		X														X				
18	Ralph Wall, Brookhaven Solid Waste Alternative Coalition	X																		X			
19	Erin Fehn																						
20	Claire Goad				X			X															
21	Thomas Ludlum, Brookhaven Village Association							X		X	X				X		X						
22	Tom Shannon								X		X	X			X		X						
23	Toni Layden-Rodgers																						
24	Arthur Governall, South Sungate Homeowners Association																						
25	Jim Vaz, South Sungate Homeowners Association				X		X																
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		7.3.1	7.3.2	7.3.3	7.3.4	7.3.5	7.3.6	7.3.7	7.3.8	7.4	7.5.1	7.5.2	7.5.3	7.5.4	7.5.5	7.5.6	7.5.7	7.5.8	8.1	8.2.1	8.2.2	8.2.3	8.2.4	
<i>SPEAKERS AT PUBLIC HEARING</i>																								
1	Elizabeth Gundlach																							
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4	Marilyn McKeown																							
5	Faith McCutcheon																							
6	Virginia Weston																							
7	Steven Romalewski																							
8	Dr. R. E. Watson		X																		X			
9	Joop van der Grinten																				X			
10	Mary Jo Farrell																				X			
11	Debra Brown																							
12	Lin Marie Dastis																							
13	Theresa Gelsmer																							
14	Teresa Busardo																							
15	Leslie O'Conner																				X			
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<i>SPEAKERS AT PUBLIC HEARING</i>																						
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5	Falth McCutcheon																					
6	Virginia Weston																					
7	Steven Romalewski	X	X																			
8	Dr. R. E. Watson				X																	
9	Joop van der Grinten				X																	
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19	Erin Fehn								X	X	X											
20	Claire Goad																					
21	Thomas Ludlum, Brookhaven Village Association									X	X											
22	Tom Shannon																					
23	Toni Layden-Rodgers																			X		
24	Arthur Governali, South Sungate Homeowners Association																					
25	Jim Vaz, South Sungate Homeowners Association																					
26	Jennifer Garcia									X			X		X							
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9	Joop van der Grinten																			
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<i>WRITTEN COMMENTS RECEIVED</i>																						
33	Ruthann Youngman																					
34	Adrienne Kanowitz																					
35	Sally Pezza/Rich Suelt													X					X	X		
36	NYPIRG <i>See also ID # 7</i>				X																	
37	Hampton Ave. School Teachers Health Questionnaire															X						
38	Brookhaven Solid Waste Alternatives Coalition, N. Essel and R. Wall <i>See also ID #'s 16, 17 & 18</i>		X		X			X		X												
39	Environmental Defense Fund, Art Cooley	X	X	X	X	X	X		X	X												
40	South Sungate Homeowners Association <i>See also ID #'s 24 & 25</i>												X						X			
41	Rita Molloy												X	X								
42	Brookhaven Village Association, Thomas Ludlam <i>See also ID # 21</i>																					
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44	Yaphank Taxpayers & Civic Association, F. Hurley, V. Petrofski																					
45	NYS Department of Environmental Conservation, G. Hammarth																					
46	Hon. Caesar Trunzo, NYS Senate	X								X	X											
47	Nancy Carlino												X							X		
48	Suffolk County Dept. of Public Works, R. Lavalle																					
49	Longwood Alliance, C. Kepert	X					X							X								
50	Sally Corrigdor	X												X				X				
51	Jackie Hartman																					
52	Robert A.W. Heins																			X		
53	J. Keith & Karen Rowley	X								X				X	X							
54	Students for Environmental Quality - Bellport High School																					
55	Dava Stravinsky																					
56	Medford Taxpayers & Civic Association, D. Seubert	X																				
57	Brookhaven Village Association, N. Delittas 11/10																X					
58	South Country Alliance, T. Kieley			X										X	X							
59	Town of Brookhaven Dept. of Planning, Environment & Dvlp., J. Pavacic																					
60	Joseph Ferraro																					
61	Brookhaven Village Association, N. Delittas 12/10 <i>See also ID # 57</i>																					
62	Jennifer Clement	X								X	X			X								
63	Sally Pezza													X								
64	Students of Hampton Avenue School, Bellport													X								

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36	NYPIRG <i>See also ID # 7</i>	X	X																				
37	Hampton Ave. School Teachers Health Questionnaire																						
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46	Hon. Caesar Trunzo, NYS Senate																						
47	Nancy Carlino																						
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58	South Country Alliance, T. Kiely																						
59	Town of Brookhaven Dept. of Planning, Environment & Dvlp., J. Pavacic <i>See also Response 6.2.9</i>																						
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45	NYS Department of Environmental Conservation, G. Hammarth																		X					
46	Hon. Caesar Trunzo, NYS Senate		X						X															
47	Nancy Carlino																						X	
48	Suffolk County Dept. of Public Works, R. Lavallo										X										X			
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50	Sally Corrigdor																		X					
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52	Robert A.W. Heins																		X					
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39	Environmental Defense Fund, Art Cooley																			
40	South Sungate Homeowners Association <i>See also ID #'s 24 & 25</i>											X								
41	Rita Molloy																	X		X
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59	Town of Brookhaven Dept. of Planning, Environment & Dvlp., J. Pavacic	X	X	X	X	X	X	X	X	X	X			X						
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66	FORM LETTER 2 (not managed)												X								X		
67	FORM LETTER 3 (further development)																						
68	FORM LETTER 4 (eyesore)																						
69	FORM LETTER 5 (commercial recycling)																						
70	FORM LETTER 6 (Brookhven 4%)																						
71	NYS Department of Transportation, J. Falotico																						
72	Suffolk County Department of Planning, A. Kunz																						

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	FORM LETTERS																							
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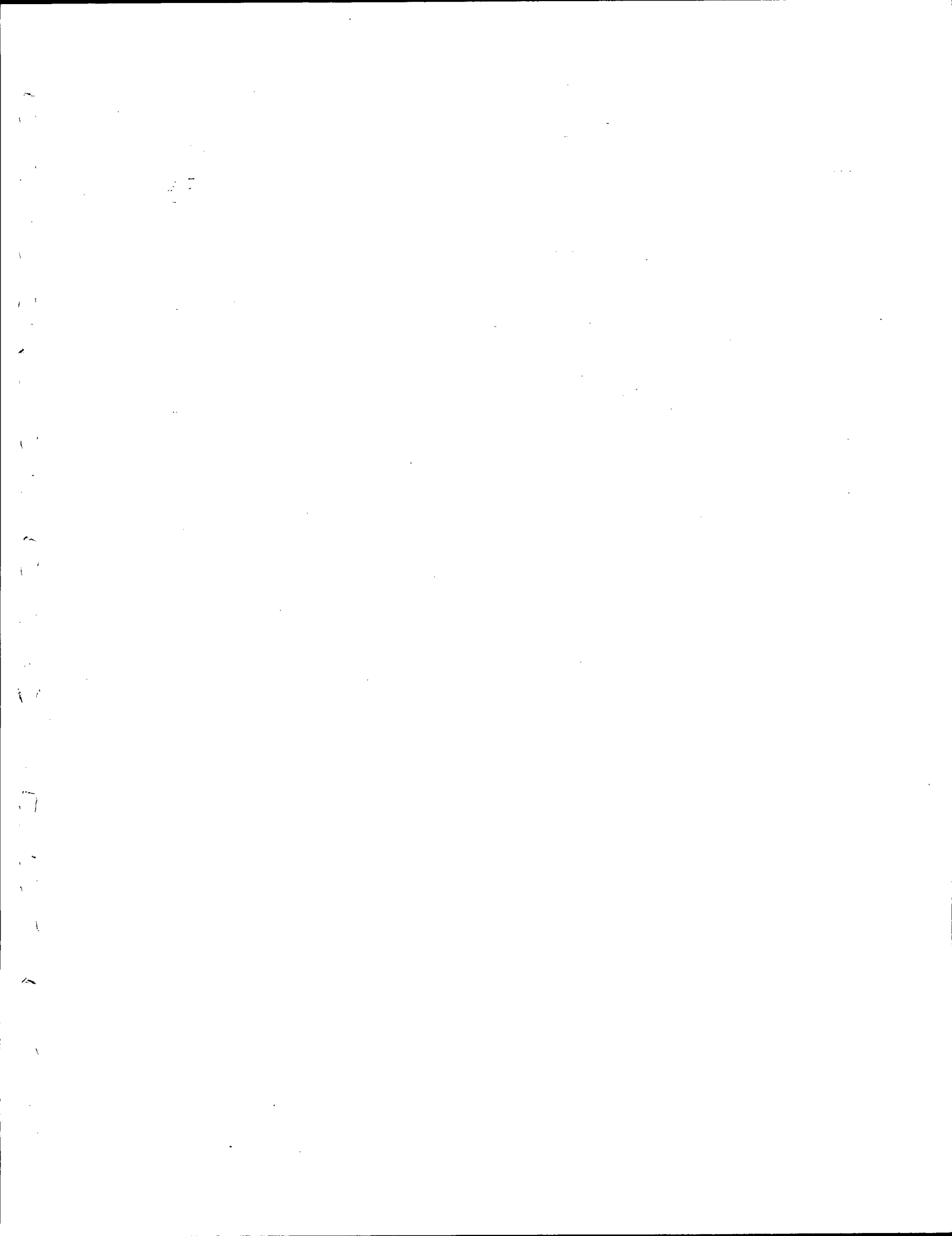
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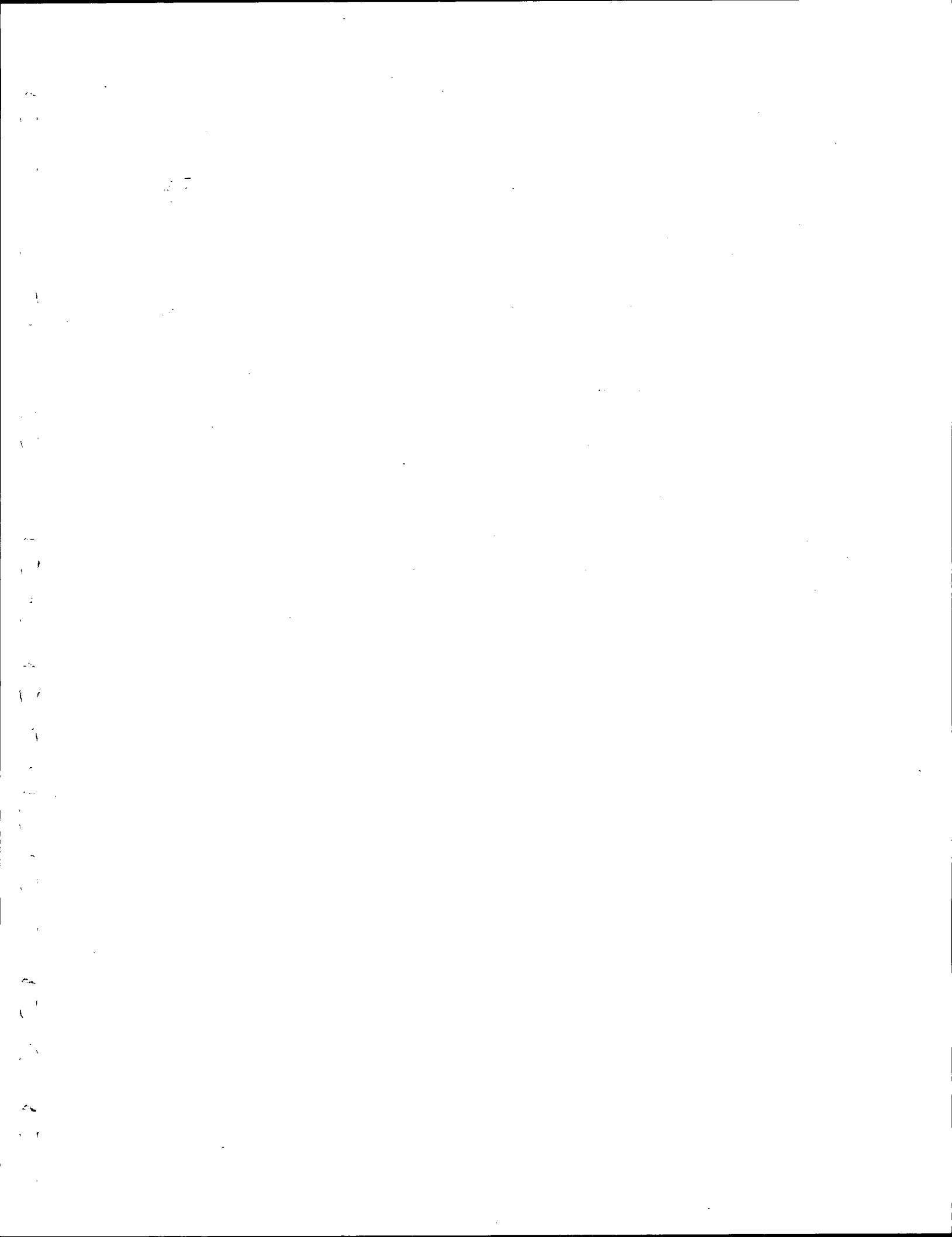
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APPENDIX 4
OCCUPATIONAL HEALTH GUIDELINES FOR HYDROGEN SULFIDE



Occupational Health Guideline for Hydrogen Sulfide

INTRODUCTION

This guideline is intended as a source of information for employees, employers, physicians, industrial hygienists, and other occupational health professionals who may have a need for such information. It does not attempt to present all data; rather, it presents pertinent information and data in summary form.

SUBSTANCE IDENTIFICATION

- Formula: H₂S
- Synonyms: Sulfuretted hydrogen; hydrosulfuric acid; hepatic gas
- Appearance and odor: Colorless gas with a strong odor of rotten eggs. The odor of this gas should not be used as a warning, since its presence may deaden the sense of smell. Hydrogen sulfide can also exist as a liquid at low temperature and high pressure.

PERMISSIBLE EXPOSURE LIMIT (PEL)

The current OSHA standard for hydrogen sulfide is a ceiling level of 10 parts of hydrogen sulfide per million parts of air (ppm) or a maximum allowable peak of 50 ppm for 10 minutes once, if no other measurable exposure occurs. NIOSH has recommended that the permissible exposure limit be reduced to 15 mg/m³ (10 ppm) averaged over a 10-minute period, and that work areas in which the concentration of hydrogen sulfide exceeds 70 mg/m³ be evacuated. The NIOSH Criteria Document for Hydrogen Sulfide should be consulted for more detailed information.

HEALTH HAZARD INFORMATION

• Routes of exposure

Hydrogen sulfide can affect the body if it is inhaled or if it comes in contact with the eyes, skin, nose or throat. It can also affect the body if it is swallowed.

• Effects of overexposure

1. *Short-term Exposure:* Inhalation of high concentrations of hydrogen sulfide vapor may cause loss of consciousness and death. Inhalation of lower concentrations may cause headache, dizziness, and upset stomach. Exposure to hydrogen sulfide can cause temporary loss of the sense of smell, and irritation of the eyes, nose, or throat.

2. *Long-term Exposure:* Not known.

3. *Reporting Signs and Symptoms:* A physician should be contacted if anyone develops any signs or symptoms and suspects that they are caused by exposure to hydrogen sulfide.

• Recommended medical surveillance

The following medical procedures should be made available to each employee who is exposed to hydrogen sulfide at potentially hazardous levels:

1. *Initial Medical Examination:*

—A complete history and physical examination: The purpose is to detect pre-existing conditions that might place the exposed employee at increased risk, and to establish a baseline for future health monitoring. Examination of the eyes and lungs should be stressed.

—Eye disease: Hydrogen sulfide is a severe eye irritant and may cause tissue damage. Those with pre-existing eye problems may be at increased risk from exposure.

—14" x 17" chest roentgenogram: Hydrogen sulfide may cause human lung damage. Surveillance of the lungs is indicated.

—FVC and FEV (1 sec): Hydrogen sulfide is a respiratory irritant. Persons with impaired pulmonary function may be at increased risk from exposure. Periodic surveillance is indicated.

2. *Periodic Medical Examination:* The aforementioned medical examinations should be repeated on an annual basis, except that an x-ray is considered necessary only when indicated by the results of pulmonary function testing, or by signs and symptoms of respiratory disease.

These recommendations reflect good industrial hygiene and medical surveillance practices and their implementation will assist in achieving an effective occupational health program. However, they may not be sufficient to achieve compliance with all requirements of OSHA regulations.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service Centers for Disease Control
National Institute for Occupational Safety and Health

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

• Summary of toxicology

Hydrogen sulfide gas is a rapidly acting systemic poison which causes respiratory paralysis with consequent asphyxia at high concentrations. It irritates the eyes and respiratory tract at low concentrations. Inhalation of high concentrations of hydrogen sulfide, 1000 to 2000 ppm, may cause coma after a single breath and may be rapidly fatal; convulsions may also occur. Exposure to concentrations of hydrogen sulfide above 50 ppm for one hour may produce acute conjunctivitis with pain, lacrimation, and photophobia; in severe form this may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. In low concentrations, hydrogen sulfide may cause headache, fatigue, irritability, insomnia, and gastrointestinal disturbances; in somewhat higher concentrations it affects the central nervous system, causing excitement and dizziness. Prolonged exposure to 250 ppm of hydrogen sulfide may cause pulmonary edema. Prolonged exposure to concentrations of hydrogen sulfide as low as 50 ppm may cause rhinitis, pharyngitis, bronchitis, and pneumonitis. Repeated exposure to hydrogen sulfide results in increased susceptibility, so that eye irritation, cough, and systemic effects may result from concentrations previously tolerated without any effect. Rapid olfactory fatigue can occur at high concentrations.

CHEMICAL AND PHYSICAL PROPERTIES

• Physical data

1. Molecular weight: 34.08
2. Boiling point (760 mm Hg): -60 C (-76 F)
3. Specific gravity (water = 1): Liquid = 1.54
4. Vapor density (air = 1 at 15 C (59 F)): 1.189
5. Melting point: -82.4 C (-116 F)
6. Vapor pressure at 25 C (77 F): 20 atm
7. Solubility in water, g/100 g water at 20 C (68 F): 2.9 (slight)
8. Evaporation rate (butyl acetate = 1): Not applicable

• Reactivity

1. Conditions contributing to instability: Elevated temperatures may cause containers to burst.
2. Incompatibilities: Contact with strong oxidizers and oxidizing materials may cause fires and explosions. Hydrogen sulfide attacks many metals, which results in the formation of sulfides.
3. Hazardous decomposition products: Toxic gases and vapors (such as sulfur oxides) may be released in a fire involving hydrogen sulfide.
4. Special precautions: Liquid hydrogen sulfide will attack some forms of plastics, rubber, and coatings.

• Flammability

1. Hydrogen sulfide is a flammable gas.
2. Autoignition temperature: 260 C (500 F)
3. Flammable limits in air, % by volume: Lower: 4.3; Upper: 46
4. Extinguishant: Alcohol foam, carbon dioxide

• Warning properties

1. Odor Threshold: According to the AIHA *Hygienic Guide*, hydrogen sulfide can be recognized by the "sense of smell at low concentrations. Odor not reliable at high concentrations, and olfactory fatigue occurs quickly Threshold is 0.13 ppm. Faint but readily perceptible at 0.77 ppm. Easily noticeable at 4.6 ppm. Strong, unpleasant, but not intolerable at 27 ppm." The *Hygienic Guide* also states that "olfactory fatigue can occur with(in) 2 to 15 minutes at 100 ppm."

2. Eye Irritation Level: Grant states that "effects of hydrogen sulfide on the eyes are notable only at sublethal concentrations, most commonly at concentrations so low that they have no discernible systemic effect Typically, workmen exposed to low concentrations of hydrogen sulfide gas . . . have no sensation of irritation or discomfort for at least several hours, or sometimes for several days while working in the presence of low concentrations. Ocular symptoms generally start after several hours of exposure and may not appear until the patient has finished his work for the day. There is then gradual onset of a scratchy, irritated sensation in the eyes, with tearing and burning Experimentally it is demonstrable that at a concentration of 100 ppm in air an immediate irritation of the eyes and respiratory tract is produced, but conditions responsible for the vast majority of cases of hydrogen sulfide keratoconjunctivitis are those in which the concentration is too low to cause immediate irritation and has toxic effect only after several hours or days of exposure. However, in industries where the concentration is regularly kept below 10 ppm in air, it is rare to have any irritation of the eyes."

The *Hygienic Guide* states that "50 to 100 ppm causes slight conjunctivitis and respiratory tract irritation after 1 hour."

3. Evaluation of Warning Properties: Since olfactory fatigue occurs at high concentrations, and since the irritant effects are delayed, hydrogen sulfide is treated as a material with poor warning properties.

MONITORING AND MEASUREMENT PROCEDURES

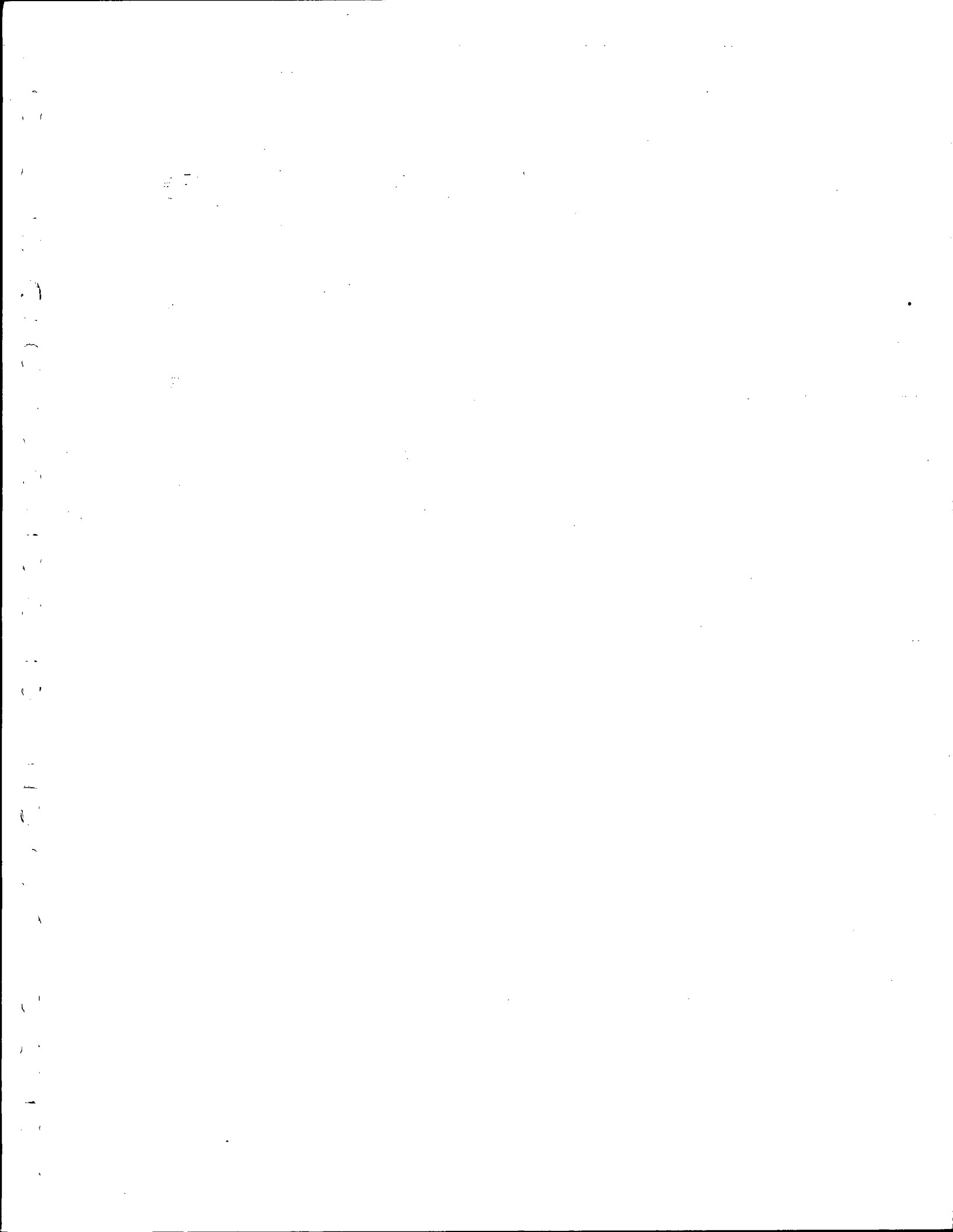
• Eight-Hour Exposure Evaluation


Measurements to determine employee exposure are best taken so that the average eight-hour exposure is based on a single eight-hour sample or on two four-hour samples. Several short-time interval samples (up to 30 minutes) may also be used to determine the average exposure level. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee).

• Ceiling Evaluation

Measurements to determine employee ceiling exposure are best taken during periods of maximum expected airborne concentrations of hydrogen sulfide. Each measurement should consist of a fifteen (15) minute sample or series of consecutive samples totalling fifteen (15)

APPENDIX 5
LANDFILL GAS TEST RESULTS FROM
DECEMBER 1992 SAMPLING EVENT





**A T L A N T I C
A N A L Y T I C A L
L A B O R A T O R Y**

Mr. Richard Calogero
Wehran Engineering
Wehran EnviroTech
666 East Main Street
Middletown, NY 10940

Report No. AAL-8220
Date Requested 12-21-92
Date Reported 12-30-92
P.O. No. 54345

Material Submitted: Two Tedlar Bag Samples and Two Stainless
Steel Cylinders; Project 09999BR


Information Requested: Mass Spectrometry and Gas Chromatography
Analysis

Notebook: RF088, P62, 71; MS0085, p13; SS089, p66

Two landfill gas samples, have been analyzed by mass spec-
trometry, and gas chromatography for the constituents requested.

Results are reported on the attached pages.

d1230



Victor H. Given

FAX: 914-692-7376

Results of AnalysisConcentration % by volume
(dry basis)

<u>Constituents</u>	<u>Sample 1</u>	<u>Sample 2</u>
Nitrogen	0.15	0.41
Oxygen	0.05	0.14
Carbon dioxide	43.3	43.7
Methane	56 +	55 +

Concentration ppm by volume

Ethane	4.4	3.0
Ethylene	5.2	5.4
Propane	19	33
Propylene	3.7	4.5
Isobutane	4.2	4.7
n Butane	2.7	4.0
Butene	7.8	6.8
Hydrogen sulfide	12	900

ND = None detected, followed by the limit of detection.

Results of Analysis

Concentration, ppm by volume

<u>Constituent</u>	<u>Sample 1</u>	<u>Sample 2</u>
Hydrogen sulfide	12	900
Carbonyl sulfide	ND 0.1	ND 0.5
Sulfur dioxide	ND 0.1	ND 0.5
Methyl mercaptan	ND 0.1	ND 0.5
Ethyl mercaptan)		
Methyl sulfide)	0.73	4.1
Carbon disulfide	ND 0.1	ND 0.5
Isopropyl mercaptan	0.12	13
Methyl ethyl sulfide)		
n Propyl mercaptan)	0.1	ND 0.5
t-Butyl mercaptan	0.23	0.52
Dimethyl disulfide	ND 0.1	ND 0.5
sec-Butyl mercaptan	0.29	11
Isobutyl mercaptan	ND 0.1	ND 0.5
n Butyl mercaptan	ND 0.1	ND 0.5

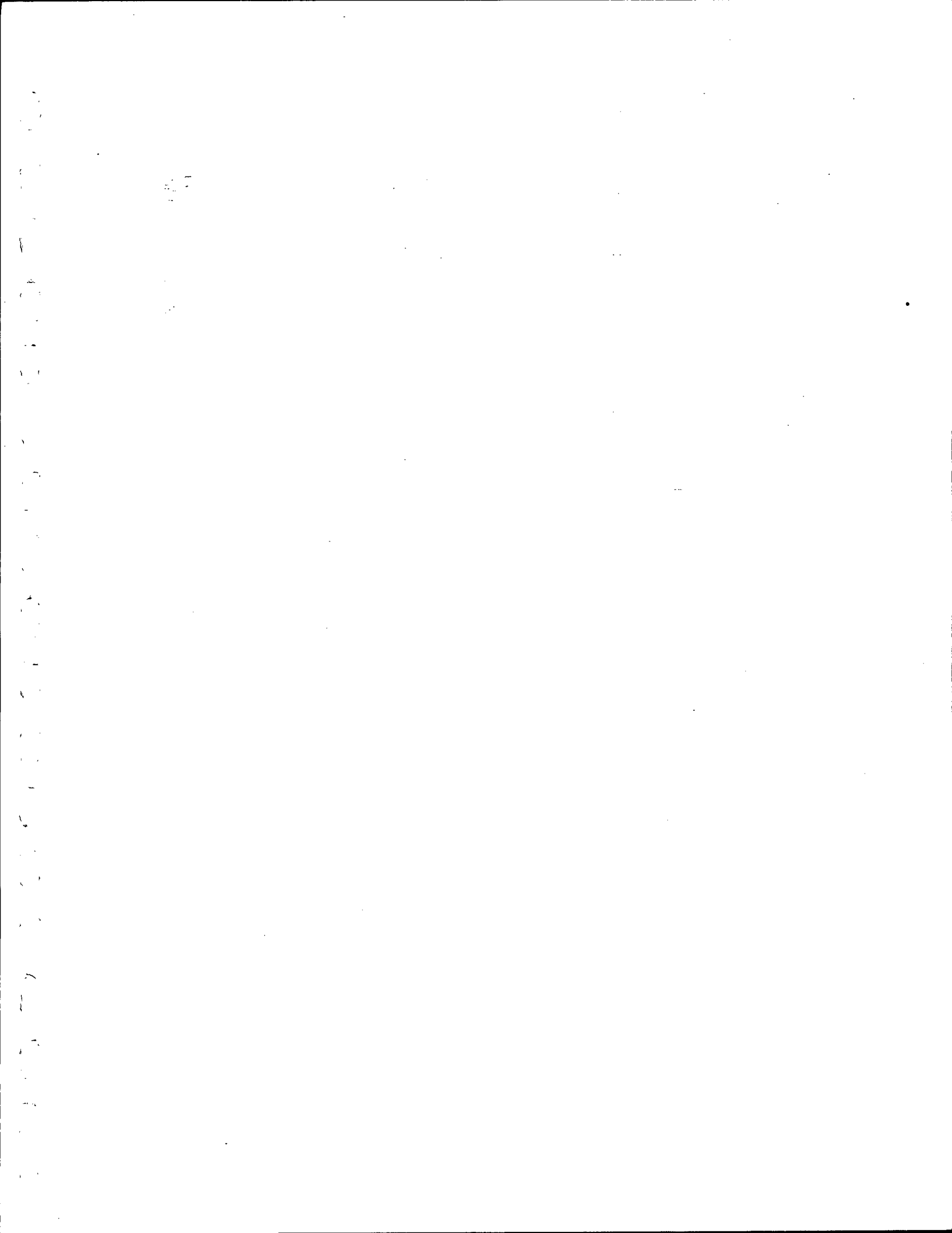
ND = None detected, followed by the limit of detection.

Results of Analysis

<u>Constituents</u>	<u>Concentration ppm by volume</u>	
	<u>Sample 1</u>	<u>Sample 2</u>
Chloromethane	ND 1	ND 1
Bromomethane	ND 5	ND 5
Vinyl chloride	ND 1	ND 1
Chloroethane	ND 1	ND 1
Methylene chloride	ND 1	ND 1
Acetone	ND 5	ND 5
1,1-Dichloroethene	ND 1	ND 1
1,1-Dichloroethane	ND 1	ND 1
1,2-Dichloroethene	ND 1	ND 1
Chloroform	ND 1	ND 1
1,2-Dichloroethane	ND 1	ND 1
2-Butanone	ND 5	ND 5
1,1,1-Trichloroethane	ND 1	ND 1
Carbon tetrachloride	ND 1	ND 1
Vinyl acetate	ND 5	ND 5
Bromdichloromethane	ND 1	ND 1
1,2-Dichloropropane	ND 1	ND 1
cis-1,3-Dichloropropene	ND 1	ND 1
Trichloroethene	ND 1	ND 1
Dibromochloromethane	ND 1	ND 1
1,1,2-Trichloroethane	ND 1	ND 1
Benzene	ND 1	1.3
trans-1,3-Dichloropropene	ND 1	ND 1
Bromoform	ND 5	ND 5
4-Methyl-2-pentanone	ND 5	ND 5
2-Hexanone	ND 5	ND 5
Tetrachloroethene	ND 1	ND 5
Toluene	ND 1	28
1,1,2,2-Tetrachloroethane	ND 1	ND 1
Chlorobenzene	ND 1	ND 1
Ethyl benzene	11	15
Styrene + σ Xylene	8.2	12
m+p Xylenes	5.0	8.0

ND = None detected, followed by the limit of detection.

**APPENDIX 6
STATUS OF GROUNDWATER ASSESSMENT
AT EXISTING LANDFILL**



APPENDIX 6
STATUS OF GROUNDWATER ASSESSMENT
FROM EXISTING LANDFILL

The impacts on groundwater quality resulting from the existing Brookhaven Landfill have been the subject of an ongoing groundwater quality monitoring and assessment program conducted by the Environmental Facilities Corporation between 1972 and 1974, by the Town of Brookhaven since 1974, and by the Town in conjunction with the United States Geological Survey (USGS) in the 1980s. Since 1990, the Town and Dvirka and Bartilucci Consulting Engineers have been conducting the groundwater monitoring program as reported in the Brookhaven Landfill Groundwater Assessment Report of March 1990, and updated in November 1990, April 1992, and June 1993. As summarized in Section 3.2.1.3 of the DEIS, the assessment program has basically consisted of annual sampling and analysis of groundwater from approximately 60 monitoring wells located upgradient, adjacent to and downgradient of the Existing Landfill, and the sampling and analysis of surface water samples from Beaverdam Creek.

All groundwater and surface water samples collected as part of the landfill monitoring/assessment program are analyzed for the following select inorganic constituents, which generally comprise landfill leachate indicators: alkalinity, bicarbonate, chloride, ammonia, nitrogen, nitrate, nitrite, sulfate, total dissolved solids, total Kjeldahl nitrogen and eight metals. In addition, a select number of monitoring wells located both upgradient and downgradient of the landfill have also been sampled and analyzed for Target Compound List (TCL) volatile organic compounds. These wells are located along the southern and eastern boundaries of the Existing Landfill, south of Sunrise Highway, and at select locations south of the Montauk Highway.

In general, as a result of monitoring by the USGS and the Town, impacted groundwater has been observed extending southeast from the Existing Landfill. Monitoring wells installed in 1991 south of Montauk Highway as part of the Town's monitoring program have been sampled and analyzed for leachate indicators and TCL volatile organic compounds, and have exhibited elevated concentrations of inorganic constituents only. However, as described in the 1991 Groundwater Assessment Update Report (April 1992), the constituents detected in the groundwater south of Montauk Highway cannot be clearly

attributed to the Existing Landfill and may indicate groundwater contamination resulting from the application of road salt and/or local residential sanitary systems.

This monitoring has shown that groundwater in the Upper Glacial Aquifer contains elevated concentrations of inorganic constituents extending for a distance of approximately 3,000 feet downgradient of the Existing Landfill, and an area of volatile organic compound-contaminated groundwater located immediately contiguous to and downgradient of the Existing Landfill. The components of the volatile organic contamination are predominantly benzene, toluene, ethylbenzene and xylene, all of which are typically associated with gasoline and other petroleum-derived fuels.

Decreasing concentrations of leachate indicator parameters measured at the downgradient edge of the landfill over the last 2 years appear to be attributable to increased leachate removal and capping of the inactive cells at the Existing Landfill. These results indicate that the source of the groundwater contamination is being reduced and groundwater quality in the immediate vicinity of the Existing Landfill is improving. As a result of the data obtained by the Town as part of the groundwater monitoring and assessment program, in 1992, the NYSDEC removed the Existing Landfill from New York State's list of possible inactive hazardous waste sites.

Currently, in addition to the annual groundwater monitoring and assessment program, the Town has been examining potential remediation alternatives to address the volatile organic contamination of groundwater downgradient of the Existing Landfill. The evaluation of alternatives includes the planning and execution of a pumping test on the south side of the Existing Landfill to evaluate the potential for design of a groundwater extraction and treatment system. Additionally, a closure investigation, planned for 1993, is underway for the Existing Landfill which will define both the hydrogeologic regime and groundwater quality at the site, and include the development of a long-term monitoring plan and contingency plan for groundwater remediation, if required.

APPENDIX 7 SUMMARY OF PROPERTY VALUE STUDIES

Real estate values have always been affected, both positively and negatively, by surrounding land uses. While it has always been assumed that buyers would pay less for a house in close proximity to a landfill, modern laws, restrictions, and management techniques, however, can potentially reduce or prevent adverse impact of a landfill during its useful life. Once a landfill is closed, any impact it may have would depend on the land use to which it is converted.

One study, documented in *The Appraisal Journal* (1991), compared the housing prices of a Los Angeles neighborhood located adjacent to a landfill (the target area) with two comparable neighborhoods located one to one and one-half miles, and three to six miles, from the landfill. The landfill used in the study was designed, and managed, to minimize its effect on surrounding neighborhoods. Located on the north slope of a hill, the south slope, which abuts neighboring homes, was undeveloped land owned by the County. Litter was controlled by on-site personnel, large mesh fences surrounded actual disposal sites, and frequent patrols were dispatched to gather any litter that might be carried off site.

The data used in the analysis consisted of 1,628 sale transactions that occurred between January 1978 and early 1988. The comparable neighborhoods were selected by carefully matching detailed demographic, socioeconomic, and housing characteristics with those of the target area. The results of a regression analysis concluded that a well designed and managed landfill can be a "good neighbor and have no statistically measurable negative impacts on surrounding property values".

A second study, conducted by the Institute for Research on Land and Water Resources (Pennsylvania State University, 1982), considered whether operating sanitary landfills have adverse effects on community development and residential property values. Ten sanitary landfills operating under permits from the Pennsylvania Department of Environmental Resources (PADER) were selected for the study. Residential property values were determined for the community surrounding each landfill. The study concluded that there was no evidence to suggest that the landfills had any adverse effects on growth or development in the surrounding communities. In addition, multiple regression analysis

results showed that there were no discernible effects on residential property or lot sale (undeveloped land) values.

A third study conducted by Callaway and Pric, Inc. and presented at the GRCDA Annual Symposium in 1988, was commissioned by the Palm Beach County Florida Solid Waste Authority. This study sought to examine the potential impact of various types of solid waste facilities, including landfills, on surrounding residential neighborhoods. This study examined the surrounding property values of various landfill facilities in Florida, New York, and Manitoba, Canada. The study concluded that in none of the areas examined exhibited a decline in residential property values due to the existence of a solid waste management facility.

A fourth study, performed by Feiss and Atwater and presented at the Canadian Waste Management Conference, 1988 examined the significances of property value guarantees as a means for siting waste disposal facilities. The report surveyed a number of studies that have been performed on landfill developments at various locations in the United States and Canada. These studies were performed during a period from 1972 to 1987. The reported results of this survey indicate that the landfill developments had no consistently significant impacts on property values.

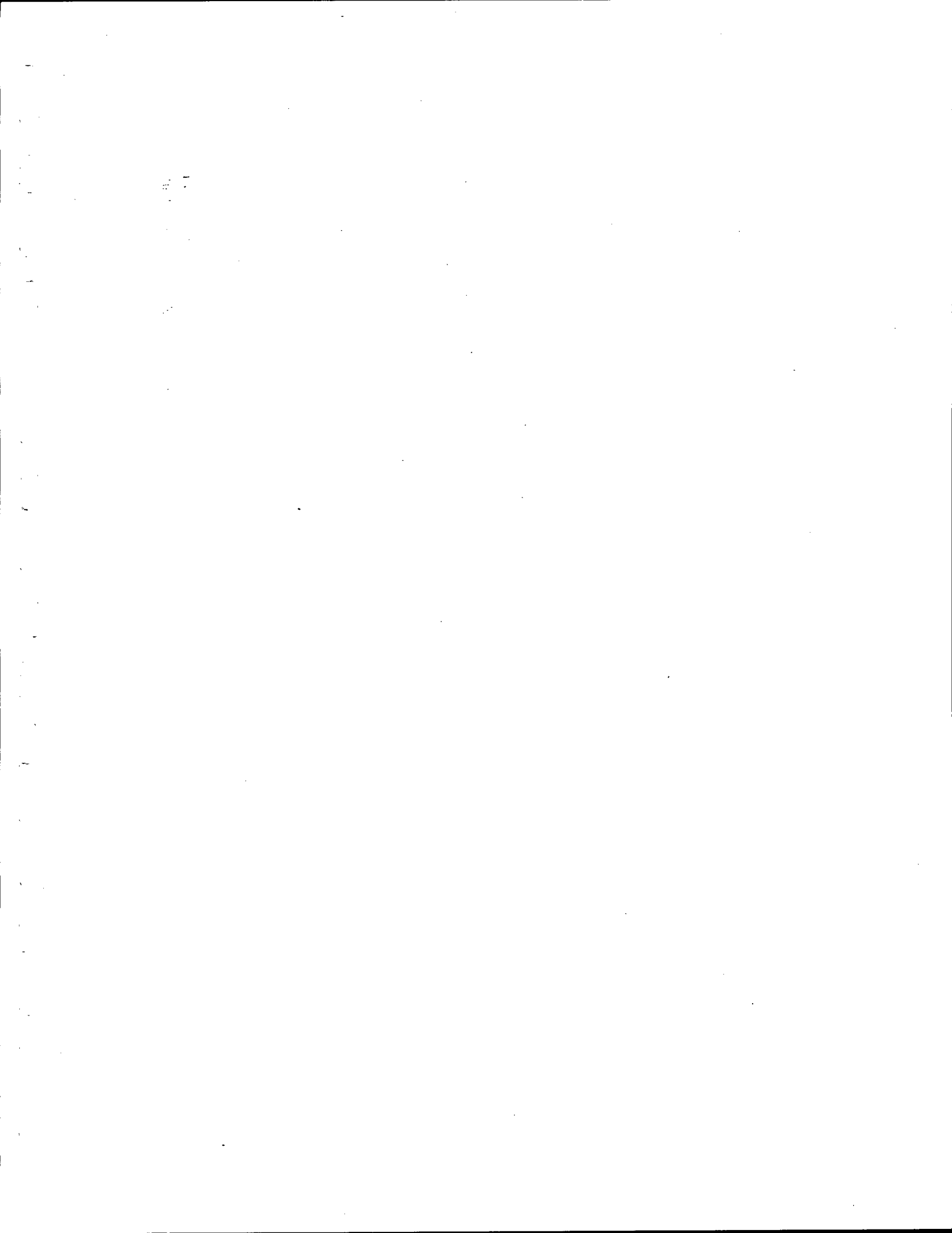
A review of the literature discussed above concludes that a sanitary landfill designed and operated according to current regulatory standards should not adversely impact surrounding property values.

**APPENDIX 8
HYDROGEOLOGICAL STUDIES IN THE
VICINITY OF SOUTH YAPHANK**

critiques both the Fanning, Phillips and Molnar and the Voorhis reports and presents additional hydraulic data which support the critique of the other two reports referenced.

None of the three reports make any statement that the collection of further data is justified by speculation on the recharge-discharge boundaries in the vicinity of the Existing Landfill or Landfill Expansion Area. All three reports place the Existing Landfill and proposed Landfill Expansion Area south of the deep flow Magothy recharge area boundary, in the area of discharge to the Upper Glacial aquifer.

APPENDIX 9
ASH SAMPLING DATA FROM HEMPSTEAD ERF (JULY 1992)



Hemp Ash



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

Project No.: 9219203
Log in No. : 13242
P.O. No. : AH12303
Date : Aug. 17, 1992

ANALYTICAL DATA REPORT
PACKAGE FOR

American Ref-Fuel

600 Ave. C at Stewart Ave.

Westbury, NY 11590

ATTN: Ann Marie Byrnes
REF: Ash Samples

LABORATORY
NUMBER

SAMPLE
IDENTIFICATION

TYPE OF
SAMPLE

SEE NEXT PAGE

WE CERTIFY THAT THIS REPORT IS A
TRUE REPORT OF RESULTS OBTAINED
FROM OUR TESTS OF THIS MATERIAL.

RESPECTFULLY SUBMITTED,
NYTEST ENVIRONMENTAL INC.

DOUGLAS SHEELEY
LABORATORY DIRECTOR

NYS Lab ID. #10195
NJ Cert. #73469
mar

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

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Log in No.: 13242

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II. Chain of Custody.	1
III. Laboratory Deliverable Checklist.	NA
IV. Laboratory Chronicle.	2
V. Non Conformance Summary (Case Narrative).	3
VI. Methodology Summary	4 - 7
VII. Data Reporting Qualifiers	8
VIII. Sample Results	9 - 31
IX. Quality Assurance Summary (Including Initial and Continuing Calibration Time and Date)	NA



AMERICAN
REF-FUEL
COMPANY OF HEMPSTEAD

600 AVENUE C • AT STEWART AVENUE • WESTBURY, NEW YORK 11590 • 516/683-5400

CHAIN OF CUSTODY

DATE: 7/7/92 - 7/8/92

SAMPLE I.D.: 1A, 2A, 3A, 4A, 5A

TESTS:

See attached letter

COMMENTS:

SAMPLE COLLECTED BY: Ann Marie Byrnes

RELINQUISHED BY	RECIEVED BY	DATE	TIME	REMARKS
Ann Marie Byrnes	Makeda Green	7-9-92	1 pm	
Makeda Green	Robt. H. Hitt	7-9-92	1:25	

0000001

CHAIN

Laboratory Chronicle

Log In No.: 13242

Client Name: American Ref-Fuel

Date Received: 7/09/92

Sample ID: As per cover page

Organics Extraction:

- 1. Acids _____
- 2. Base/Neutrals _____
- 3. Pesticides/PCBs _____
- 4. Dioxin _____

Analysis:

- 1. Volatiles _____
- 2. Acids _____
- 3. Base/Neutrals _____
- 4. Pesticides/PCBs _____
- 5. Dioxin _____

Section Supervisor
Review & Approval _____

Inorganics:

TCLP Digestion - 7/20/92 Analysis - 7/28/92
SW924 Digestion - 7/20/92 Analysis - 7/28/92

- 1. Metals _____
- 2. Cyanides _____
- 3. Phenols _____

Other Analysis:

 TCLP Extraction - 7/13/92

 SW924 Extraction - 7/13/92

 Other Tests - 7/09/92, 7/20/92, 7/28/92

Section Supervisor
Review & Approval DS

Quality Control Supervisor
Review & Approval DS

If fractions are re-extracted and re-analyzed include dates for both.

000002

NON-CONFORMANCE SUMMARY
(Case Narrative)

Log In No: 13242

Samples were analyzed as per required protocols, no problems were encountered.

0000003

METHODOLOGY SUMMARY

AQUEOUS METHODOLOGIES:

	<u>REF 1</u>	<u>REF 2</u>	<u>REF 3</u>
BNA, Pesticides/PCB's Extraction		3510	
AA/ICP Sample Preparation	200.7		
Furnace Sample Preparation	200.0		
Mercury Sample Preparation	245.1		
Hexavalent Chromium Sample Preparation	218.5		
Clean-Up		3510/3640	
Organochlorine Pesticides and PCB's by Gas Chromatography			608
Herbicides by Gas Chromatography			362
Purgeable Organics by GC/MS			624
Base/Neutral, Acids by GC/MS			625
2,3,7,8-TCDD by GC/MS			613/625
BTEX			602

NON-AQUEOUS METHODOLOGIES:

BNA, Pesticides/PCB's Extraction	3550
AA/ICP Sample Preparation	3050
Furnace Sample Preparation	3020/3030/3050
Mercury Sample Preparation	7471
Clean-Up	3510/3640

Gas Chromatography/Mass Spectrometry:

Purgeable Organics	6240
Base/Neutral and Acid Extractables	6270
Organophosphorous Pesticides	6140
Organochlorine Pesticides and PCB's by Gas Chromatography	6080
BTEX	8020

METHODOLOGY SUMMARY

INDUCTIVELY COUPLED PLASMA (ICP):

REFERENCE 1

REFERENCE 2

Aluminum	200.7	6010
Antimony	200.7	6010
Barium	200.7	6010
Beryllium	200.7	6010
Cadmium	200.7	6010
Calcium	200.7	6010
Chromium	200.7	6010
Cobalt	200.7	6010
Copper	200.7	6010
Iron	200.7	6010
Lead	200.7	6010
Magnesium	200.7	6010
Manganese	200.7	6010
Molybdenum	200.7	6010
Nickel	200.7	6010
Potassium	200.7	6010
Silver	200.7	6010
Sodium	200.7	6010
Tin	200.7	6010
Titanium	200.7	6010
Vanadium	200.7	6010
Zinc	200.7	6010

FURNACE AA:

Antimony	204.1	7041
Arsenic	206.2	7060
Lead	239.2	7421
Selenium	270.2	7740
Thallium	279.2	7841
Tin	282.2	
Vanadium	286.2	7911
Mercury	245.1	7470

000005

METHODOLOGY SUMMARY

<u>ADDITIONAL INORGANIC PARAMETERS:</u>	<u>REFERENCE 1</u>	<u>REFERENCE 2</u>
Bromide	320.1	
Color	110.2	
Conductance	120.1	
Conductance		9050
Odor	140.1	
pH	150.1	
pH		9040
TDS	160.1	
TSS	160.2	
TS	160.3	
Hardness	130.1	
Temperature	170.1	
Turbidity	180.1	
Acidity	305.1	
Alkalinity	310.1	
Ammonia	350.2/350.3	
Chloride	325.3	
Chloride		9252
Residual Chlorine	330.2	
COD	410.3/410.4	
Cyanide	335.3	
Oil and Grease	413.1/413.2	
Oil and Grease		9070
Fluoride	340.2	
TKN	351.2	
NO2/NO3	353.2	
D.O.	360.2	
Petroleum Hydrocarbons (Reference 4)	418.1	
Phenol	420.2	
Phosphorus	365.1	
Silica	370.1	
Sulfate	375.2/375.4	
Sulfide	376.1	
Surfactants	425.1	
TOC	415.1	
TOX		9022

MISCELLANEOUS ANALYSIS:

Extraction Procedure Toxicity	1310
Ignitability	1010
Corrosivity	1110
Reactivity	Chapter 8.3
Toxicity Characteristic Leaching Procedure (TCLP)	(Ref. 5)

0000006

METHODOLOGY SUMMARY

REFERENCES:

- (1) USEPA-600/4-79-020, Methods for Chemical Analysis of Water and Waste
- (2) USEPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition
- (3) Federal Register 40 CFR Part 136, Vol. 49, No. 209 Test Parameters for the Analysis of Pollutants
- (4) as modified by NJDEP-BISE (for non-aqueous samples)
- (5) Federal Register Vol. 51, No. 216 Friday, 11/7/86, pp. 40643-40652

0000007

QUALIFIERS:

- U - Indicates compound was analyzed for but not detected. The number is the detection limit for the sample.
- J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the reported detection limit but greater than zero.
- B - This flag is used when the analyte is found in the method blank as well as in the sample.
- T - This flag identifies all targeted compounds that were found above the method detection limits.
- A - Aldol Condensation Product (formed from Acetone reacting with Methylene Chloride solvents used in the extraction of soil samples, not associated with sample constituents)
- D - Diluted out
- NA - Not applicable by contract.

Data on soil samples are expressed on a dry weight basis.

All non-aqueous samples are reported on soil forms. This includes samples whose matrix is listed as miscellaneous.

The Initial and Continuing Calibration dates and times for the volatile fractions are listed on the EFB summary forms.

The Initial and Continuing Calibration dates and times for the semivolatile fractions are listed on the DFTPP summary forms.

SAMPLE SUFFIXES: RE - Re-analyzed sample
DL - Sample analyzed at a secondary dilution

METHOD BLANK NOMENCLATURE - FBLK##:

- F - Fraction (V for Volatiles, S for Semivolatiles)
BLK - Indicates a blank
- Arbitrarily assigned number for that blank

GC/MS STANDARD NOMENCLATURE - PSTD###:

- F - Fraction (V for Volatiles, S for Semivolatiles)
STD - Indicates a standard
- Concentration in ppb of Volatile standards, or amount injected in ng for Semivolatile standards

000008

nytest environmental_{nc}

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #1 & #2)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

Parameter(s)	Sample Identification
	1A (1324201)
Alkalinity	706
Chloride	1072
Sulfate	386
Aluminum	0.345
Arsenic	<0.010
Barium	0.449
Cadmium	<0.010
Calcium	823
Chromium, Hexavalent	<0.01
Chromium, Total	<0.01
Copper	0.071
Iron	0.065
Lead	0.185
Manganese	<0.015
Mercury	<0.0002
Nickel	<0.040
Potassium	124
Selenium	<0.010
Silver	<0.010
Sodium	146
Zinc	0.389
Total Dissolved Solids	4690

0000009

nytest environmental_{nc}

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #3 & #4)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

Parameter(s)	Sample Identification
-----	-----
	1A
	(1324201)

Alkalinity	101
Chloride	42
Sulfate	357
Aluminum	1.2
Arsenic	<0.010
Barium	0.294
Cadmium	<0.010
Calcium	186
Chromium, Hexavalent	0.02
Chromium, Total	0.02
Copper	0.031
Iron	<0.050
Lead	<0.050
Manganese	<0.015
Mercury	<0.0002
Nickel	<0.040
Potassium	6.34
Selenium	<0.010
Silver	<0.010
Sodium	6.34
Zinc	<0.020
Total Dissolved Solids	550

0000010

nytest environmental_{inc}

REPORT OF ANALYSIS

Bulk Metal Analysis

We find as follows:

Log In No.: 13242

Parameter(s)

Sample Identification

1A
(1324201)

% Moisture

17.8

Results in mg/kg (dry wt. basis):

Chloride	31100
Aluminum	16100
Antimony	<5
Arsenic	50.7
Barium	388
Beryllium	<1
Cadmium	11.4
Calcium	7000
Chromium, Hexavalent	0.13
Chromium, Total	85.6
Copper	1190
Iron	38300
Lead	617
Mercury	13.4
Nickel	164
Selenium	<1
Silicon	173
Silver	<5
Thallium	<1
Tin	<10
Zinc	2790
Sulfate	28800
Total Dissolved Solids	NA

0000011

nytest environmental inc

2-J

TCLP Results

Sample ID: 1A
Lab ID: 1324201

EPA Hazardous Waste Number	TCLP Contaminant	Regulatory levels (mg/l)	Practical Quantitation Limit (mg/l)	Found (mg/l)
D004	Arsenic	5.0	0.5	ND
D005	Barium	100.0	10	ND
D006	Cadmium	1.0	0.1	0.181
D007	Chromium	5.0	0.5	ND
D008	Lead	5.0	0.5	ND
D009	Mercury	0.2	0.02	ND
D010	Selenium	1.0	0.1	ND
D011	Silver	5.0	0.5	ND

ND = NONE DETECTED

0000012

nytest environmental inc.

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #1 & #2)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)	Sample Identification
-----	-----
	2A
	(1324202)

Alkalinity	522
Chloride	1107
Sulfate	453
Aluminum	0.488
Arsenic	<0.010
Barium	0.5
Cadmium	<0.010
Calcium	747
Chromium, Hexavalent	<0.01
Chromium, Total	0.01
Copper	0.036
Iron	<0.050
Lead	0.517
Manganese	<0.015
Mercury	0.00025
Nickel	<0.040
Potassium	135
Selenium	<0.010
Silver	<0.010
Sodium	152
Zinc	0.156
Total Dissolved Solids	4870

0000013

nytest environmental_{inc}

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #3 & #4)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

	2A (1324202)
Alkalinity	66
Chloride	42
Sulfate	266
Aluminum	1.71
Arsenic	<0.010
Barium	0.28
Cadmium	<0.010
Calcium	136
Chromium, Hexavalent	<0.01
Chromium, Total	0.01
Copper	<0.025
Iron	<0.050
Lead	<0.050
Manganese	<0.015
Mercury	<0.0002
Nickel	<0.040
Potassium	2.39
Selenium	<0.010
Silver	<0.010
Sodium	6.84
Zinc	<0.020
Total Dissolved Solids	389

0000014

nytest environmental_{nc}

REPORT OF ANALYSIS

Bulk Metal Analysis

We find as follows:

Log In No.: 13242

Parameter(s)

Sample Identification

2A
(1324202)

% Moisture

17.3

Results in mg/kg (dry wt. basis):

Chloride	28700
Aluminum	14600
Antimony	40
Arsenic	55.4
Barium	356
Beryllium	<1
Cadmium	43.7
Calcium	83000
Chromium, Hexavalent	0.06
Chromium, Total	62.6
Copper	3490
Iron	22900
Lead	1130
Mercury	36.8
Nickel	138
Selenium	<1
Silicon	132
Silver	5.61
Thallium	<1
Tin	<10
Zinc	3830
Sulfate	16000
Total Dissolved Solids	NA

0000015

nytest environmental_{nc}

2-J

TCLP Results

Sample ID: 2A
Lab ID: 1324202

EPA Hazardous Waste Number	TCLP Contaminant	Regulatory levels (mg/l)	Practical Quantitation Limit (mg/l)	Found (mg/l)
D004	Arsenic	5.0	0.5	ND
D005	Barium	100.0	10	ND
D006	Cadmium	1.0	0.1	0.299
D007	Chromium	5.0	0.5	ND
D008	Lead	5.0	0.5	1.23
D009	Mercury	0.2	0.02	0.026
D010	Selenium	1.0	0.1	ND
D011	Silver	5.0	0.5	ND

ND = NONE DETECTED

0000016

nytest environmental_{inc.}

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #1 & #2)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

3A
(1324203)

Alkalinity	760
Chloride	862
Sulfate	422
Aluminum	<0.2
Arsenic	<0.010
Barium	0.469
Cadmium	<0.010
Calcium	703
Chromium, Hexavalent	<0.01
Chromium, Total	<0.01
Copper	0.098
Iron	<0.050
Lead	0.446
Manganese	<0.015
Mercury	0.00022
Nickel	<0.040
Potassium	100
Selenium	<0.010
Silver	<0.010
Sodium	122
Zinc	0.385
Total Dissolved Solids	4070

0000017

nytest environmental inc.

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #3 & #4)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

Parameter(s)	Sample Identification
	3A (1324203)
Alkalinity	120
Chloride	39
Sulfate	224
Aluminum	1.41
Arsenic	<0.010
Barium	0.276
Cadmium	<0.010
Calcium	131
Chromium, Hexavalent	<0.01
Chromium, Total	0.01
Copper	<0.025
Iron	<0.050
Lead	<0.050
Manganese	<0.015
Mercury	<0.00021
Nickel	<0.040
Potassium	<1
Selenium	<0.010
Silver	<0.010
Sodium	5.5
Zinc	0.02
Total Dissolved Solids	429

0000018

nytest environmental_{inc}

REPORT OF ANALYSIS

Bulk Metal Analysis

We find as follows:

Log In No.: 13242

Parameter(s)

Sample Identification

3A
(1324203)

% Moisture

19.1

Results in mg/kg (dry wt. basis):

Chloride	23100
Aluminum	24200
Antimony	34
Arsenic	31.3
Barium	1220
Beryllium	<1
Cadmium	24.5
Calcium	62600
Chromium, Hexavalent	<0.01
Chromium, Total	100
Copper	798
Iron	24400
Lead	927
Mercury	14.5
Nickel	80.5
Selenium	<1
Silicon	135
Silver	<5
Thallium	<1
Tin	<10
Zinc	2220
Sulfate	36000
Total Dissolved Solids	NA

0000019

nytest environmental_{nc}

2-J

TCLP Results

Sample ID: 3A
Lab ID: 1324203

EPA Hazardous Waste Number	TCLP Contaminant	Regulatory levels (mg/l)	Practical Quantitation Limit (mg/l)	Found (mg/l)
D004	Arsenic	5.0	0.5	ND
D005	Barium	100.0	10	ND
D006	Cadmium	1.0	0.1	0.271
D007	Chromium	5.0	0.5	ND
D008	Lead	5.0	0.5	2
D009	Mercury	0.2	0.02	0.042
D010	Selenium	1.0	0.1	ND
D011	Silver	5.0	0.5	ND

ND = NONE DETECTED

0000020

nytest environmental inc.

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #1 & #2)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)	Sample Identification
-----	-----
	4A (1324204) -----
Alkalinity	484
Chloride	711
Sulfate	314
Aluminum	0.254
Arsenic	<0.010
Barium	0.522
Cadmium	<0.010
Calcium	483
Chromium, Hexavalent	<0.01
Chromium, Total	<0.01
Copper	0.116
Iron	<0.050
Lead	0.483
Manganese	<0.015
Mercury	0.00023
Nickel	<0.040
Potassium	94.8
Selenium	<0.010
Silver	<0.010
Sodium	114
Zinc	0.103
Total Dissolved Solids	3250

0000021

nytest environmental inc

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #3 & #4)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

4A
(1324204)

Alkalinity	82
Chloride	35
Sulfate	221
Aluminum	3.55
Arsenic	<0.010
Barium	0.299
Cadmium	<0.010
Calcium	108
Chromium, Hexavalent	<0.01
Chromium, Total	0.02
Copper	<0.025
Iron	<0.050
Lead	<0.050
Manganese	<0.015
Mercury	<0.0002
Nickel	<0.040
Potassium	1.07
Selenium	<0.010
Silver	<0.010
Sodium	5.12
Zinc	<0.020
Total Dissolved Solids	355

000022

nytest environmental inc.

REPORT OF ANALYSIS

Bulk Metal Analysis

We find as follows:

Log In No.: 13242

Parameter(s)

Sample Identification

4A
(1324204)

% Moisture

19.3

Results in mg/kg (dry wt. basis):

Chloride	23700
Aluminum	19900
Antimony	62.6
Arsenic	34.8
Barium	414
Beryllium	<1
Cadmium	45.8
Calcium	77600
Chromium, Hexavalent	0.02
Chromium, Total	64.4
Copper	483
Iron	22200
Lead	1160
Mercury	11.8
Nickel	61
Selenium	<1
Silicon	138
Silver	7.93
Thallium	<1
Tin	<10
Zinc	4690
Sulfate	21400
Total Dissolved Solids	NA

0000023

nytest environmental inc

2-J

TCLP Results

Sample ID: 4A

Lab ID: 1324204

EPA Hazardous Waste Number	TCLP Contaminant	Regulatory levels (mg/l)	Practical Quantitation Limit (mg/l)	Found (mg/l)
D004	Arsenic	5.0	0.5	ND
D005	Barium	100.0	10	ND
D006	Cadmium	1.0	0.1	0.3
D007	Chromium	5.0	0.5	ND
D008	Lead	5.0	0.5	3.52
D009	Mercury	0.2	0.02	ND
D010	Selenium	1.0	0.1	ND
D011	Silver	5.0	0.5	ND

ND = NONE DETECTED

000024

nytest environmental_{inc}

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #1 & #2)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

5A
(1324205)

Alkalinity	612
Chloride	1507
Sulfate	545
Aluminum	<0.2
Arsenic	<0.010
Barium	0.463
Cadmium	<0.010
Calcium	1010
Chromium, Hexavalent	<0.01
Chromium, Total	0.01
Copper	0.042
Iron	<0.050
Lead	0.763
Manganese	<0.015
Mercury	0.00054
Nickel	<0.040
Potassium	163
Selenium	<0.010
Silver	<0.010
Sodium	180
Zinc	0.23
Total Dissolved Solids	6000

0000025

nytest environmental inc

REPORT OF ANALYSIS

SW924 ANALYSIS (Composite of Extracts #3 & #4)

We find as follows:

Log In No.: 13242

Results in mg/l:

Parameter(s)

Sample Identification

Parameter(s)	Sample Identification
	5A (1324205)
Alkalinity	113
Chloride	34
Sulfate	224
Aluminum	0.711
Arsenic	<0.010
Barium	0.279
Cadmium	<0.010
Calcium	128
Chromium, Hexavalent	<0.01
Chromium, Total	<0.01
Copper	<0.025
Iron	<0.050
Lead	0.71
Manganese	<0.015
Mercury	0.0002
Nickel	<0.040
Potassium	174
Selenium	<0.010
Silver	<0.010
Sodium	192
Zinc	118
Total Dissolved Solids	440

0000026

nytest environmental inc

REPORT OF ANALYSIS

Bulk Metal Analysis

We find as follows:

Log In No.: 13242

<u>Parameter(s)</u>	<u>Sample Identification</u>
	5A (1324205) -----
% Moisture	21.3
Results in mg/kg (dry wt. basis):	
Chloride	36500
Aluminum	20300
Antimony	65
Arsenic	41.4
Barium	420
Beryllium	<1
Cadmium	50.4
Calcium	86100
Chromium, Hexavalent	<0.01
Chromium, Total	89.6
Copper	498
Iron	25100
Lead	1470
Mercury	21
Nickel	106
Selenium	<1
Silicon	178
Silver	6.48
Thallium	<1
Tin	<10
Zinc	3700
Sulfate	29600
Total Dissolved Solids	NA

0000027

nytest environmental_{rc}

2-J

TCLP Results

Sample ID: 5A

Lab ID: 1324205

EPA Hazardous Waste Number	TCLP Contaminant	Regulatory levels (mg/l)	Practical Quantitation Limit (mg/l)	Found (mg/l)
D004	Arsenic	5.0	0.5	ND
D005	Barium	100.0	10	ND
D006	Cadmium	1.0	0.1	0.487
D007	Chromium	5.0	0.5	ND
D008	Lead	5.0	0.5	3.27
D009	Mercury	0.2	0.02	0.039
D010	Selenium	1.0	0.1	ND
D011	Silver	5.0	0.5	ND

ND = NONE DETECTED

0000028

REPORT OF ANALYSIS

SW924 ANALYSIS

We find as follows:

Log In No.: 13242

Results in mg/l:

<u>Parameter(s)</u>	<u>Sample Identification</u>
	<u>Method</u>
	<u>Blank</u>
Alkalinity	<1
Chloride	<1
Sulfate	<3
Aluminum	<0.2
Arsenic	<0.010
Barium	<0.2
Cadmium	<0.010
Calcium	<1
Chromium, Hexavalent	<0.01
Chromium, Total	<0.01
Copper	<0.025
Iron	<0.050
Lead	<0.050
Manganese	<0.015
Mercury	<0.0002
Nickel	<0.040
Potassium	<1
Selenium	<0.010
Silver	<0.010
Sodium	<1
Zinc	<0.020
Total Dissolved Solids	<10

0000029

nytest environmental inc

REPORT OF ANALYSIS

Bulk Metal Analysis

We find as follows:

Log In No.: 13242

Parameter(s)

Sample Identification

Method
Blank

% Moisture

NA

Results in mg/kg (dry wt. basis):

Chloride	<10
Aluminum	<5
Antimony	<5
Arsenic	<2
Barium	<10
Beryllium	<1
Cadmium	<1
Calcium	<50
Chromium, Hexavalent	<0.01
Chromium, Total	<5
Copper	<5
Iron	<5
Lead	<5
Mercury	<0.1
Nickel	<5
Selenium	<1
Silicon	<5
Silver	<5
Thallium	<1
Tin	<10
Zinc	<5
Sulfate	<30
Total Dissolved Solids	<10

0000030

nytest environmental_{nc}

2-J

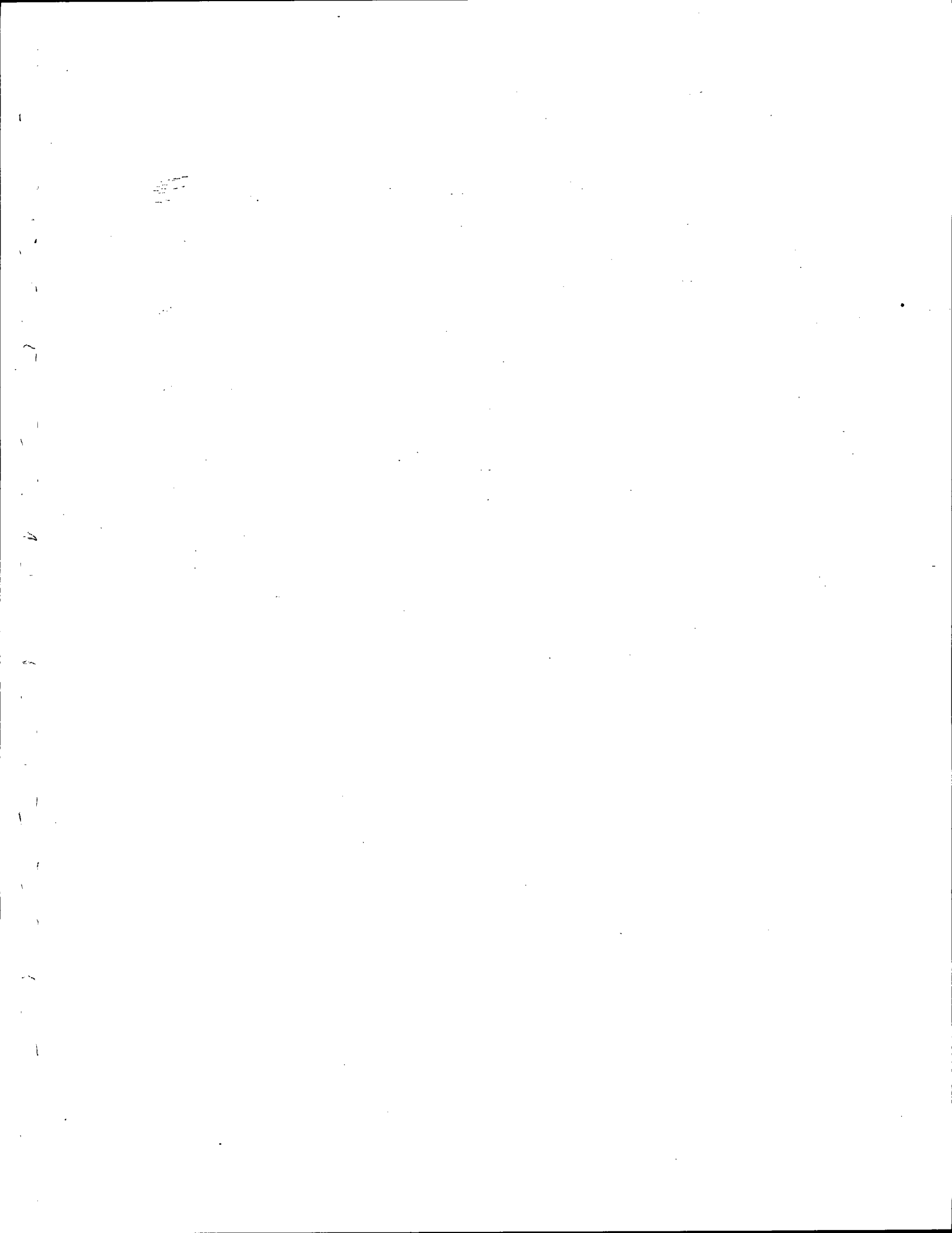
TCLP Results

Sample ID: METHOD BLANK
Lab ID: BLANK

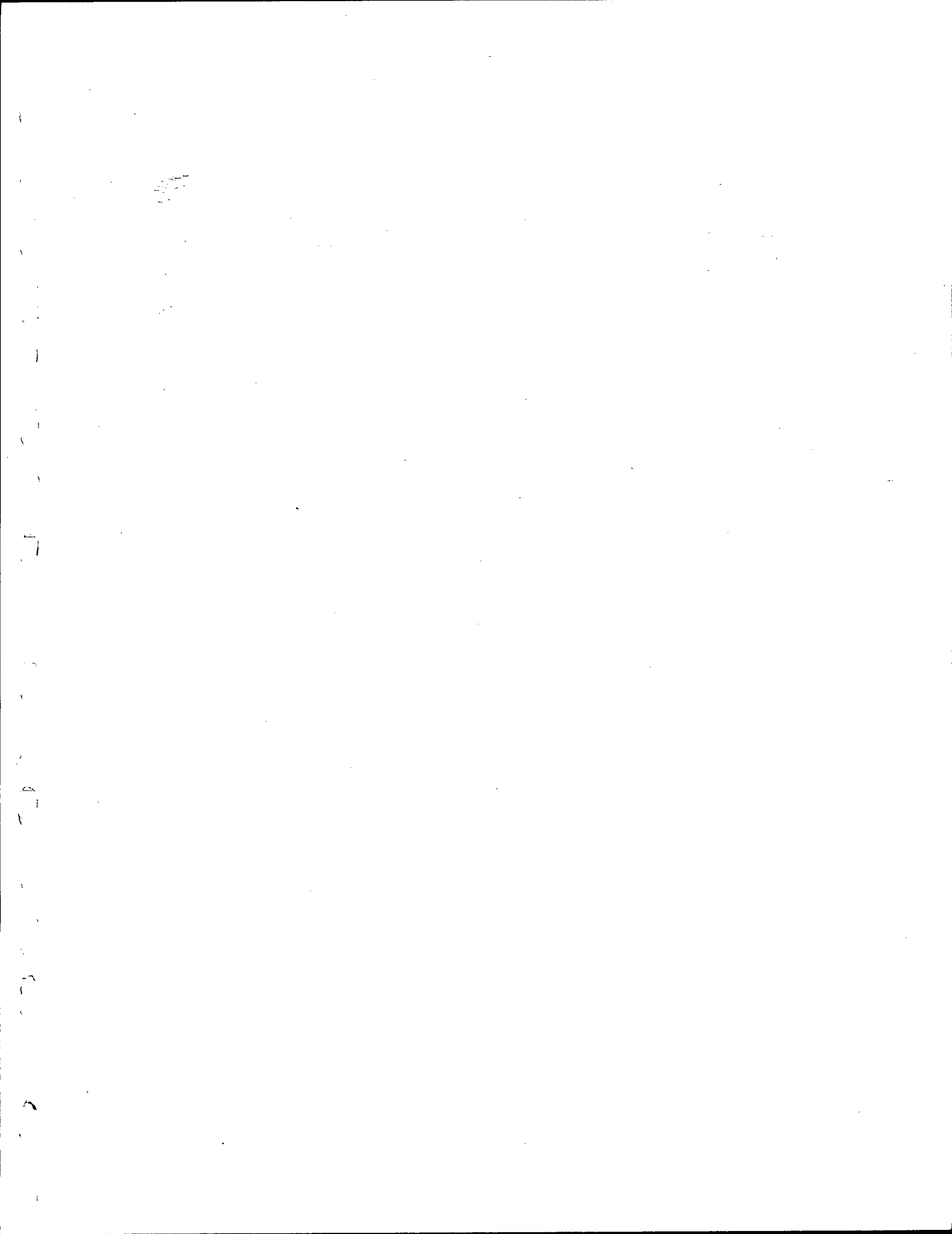
EPA Hazardous Waste Number	TCLP Contaminant	Regulatory levels (mg/l)	Practical Quantitation Limit (mg/l)	Found (mg/l)
D004	Arsenic	5.0	0.5	ND
D005	Barium	100.0	10	ND
D006	Cadmium	1.0	0.1	ND
D007	Chromium	5.0	0.5	ND
D008	Lead	5.0	0.5	ND
D009	Mercury	0.2	0.02	ND
D010	Selenium	1.0	0.1	ND
D011	Silver	5.0	0.5	ND

ND = NONE DETECTED

0000031



**APPENDIX 10
POTENTIAL HUMAN HEALTH IMPACTS DUE TO INHALATION
OF FUGITIVE DUST FROM INCINERATOR ASH AT THE
BROOKHAVEN LANDFILL**



**Potential Human Health Impacts Due to Inhalation of Fugitive Dust
From Incinerator Ash at the Brookhaven Landfill**

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Prepared for:

**Town of Brookhaven, NY
Department of Waste Management**

Potential Human Health Impacts Due to Inhalation of Fugitive Dust From Incinerator Ash at the Brookhaven Landfill

Introduction and Summary

This report responds to questions regarding the potential human health impacts due to the inhalation of fugitive dust resulting from the landfilling of incinerator ash in Cell 5 of the Brookhaven, NY Landfill. The ash is a combination of bottom ash and fly ash from the Hempstead Energy Recovery Facility (ERF). The report addresses two specific areas of concern:

- Potential health impacts of ash-related fugitive dust in the neighboring residential areas
- Potential health impacts of ash-related fugitive dust to the workers at the landfill.

The question of health impacts in the community is addressed by calculating an ash-related fugitive dust concentration at the landfill boundary that will not result in any long or short term adverse impacts. Adverse impacts include all noncancer effects and lifetime excess cancer risks for highly exposed individuals that are less than one in a million for each contaminant, and less than one in one hundred thousand for the ash-related fugitive dust as a whole. The maximum allowable fugitive dust concentrations determined in this report are compared with the measured concentrations of ash-related fugitive dust at an MSW Ash Landfill in Haverhill, Massachusetts. Based on this comparison, it appears that actual ash dust concentrations at the Brookhaven Landfill boundaries will be substantially below the maximum allowable concentration calculated in this report.

Based on the results of the Haverhill study, it appears that exposure of workers at the landfill can be maintained at the levels that are calculated to be protective of the surrounding community by existing workplace protection technology.

Identification of Toxic Contaminants

Heavy metals and chlorinated dioxins and furans have been identified in ash residues of all municipal waste combustors. Because of their toxicity, they are the contaminants of concern in these residues.

Metals

The combined ash from the Hempstead ERF has been tested for metals, including heavy metals, and the results are reported in the Town of Brookhaven Solid Waste Management Plan, Final 1991 Update/SGEIS. These results are reproduced in Table 1. For each metal, the final two columns of Table 1 presents the arithmetic mean concentration of the eight individual samples and the estimated arithmetic mean of its concentration in soils in the Eastern U.S.

All metal concentrations are given in units of mg/kg, which is equivalent to parts per million (ppm).

Comparison of the mean metal content of the ash and soils in the Eastern U.S. shows that the ash has approximately 10-100 times the soil concentration of a few metals: antimony, cadmium, calcium, copper, lead, mercury, nickel, tin and zinc. The arsenic concentration in the ash is approximately 3 times the mean soil concentration, but within the observed range of natural soils. The calcium in the ash is probably due to the lime used to quench the fly ash. The remaining metals are probably residues of refuse sent to the facility.

The chromium presents a major uncertainty in this risk evaluation. The total chromium concentration in the ash and in soils is similar. However, chromium can exist in two ionic forms: chromium III and chromium VI. Chromium III is an essential human nutrient and represents the majority of the detected chromium in soil. However, chromium VI is somewhat toxic by ingestion, and a probable human carcinogen if inhaled. Thus, the fraction of the total chromium in the ash that is chromium VI will have an effect on the predicted health impacts associated with inhalation of the ash. For the calculations in this report, it is assumed that 3% of the total chromium measured in the ash is chromium VI. This value is 10 fold higher than the 0.3% chromium VI that the USEPA estimated for emissions from municipal waste incinerators and would be applicable to fly ash (cited in ATSDR, 1991). Although few data on the composition of bottom ash are available, the fraction of respirable particles is lower than in fly ash, and the respirable fraction of bottom ash appears to have a slightly lower metals content than fly ash (NIOSH, 1990). If the fraction of chromium VI in bottom ash is the same as in fly ash (a reasonable assumption, although it may be lower in bottom ash), the estimate of 3% chromium VI in the ash should provide a 10 fold margin of safety for the protection of human health.

Chlorinated Dioxins and Furans

The concentration data for chlorinated dioxins and furans were taken from a national study of ash from five municipal waste combustors jointly sponsored by the Coalition on Resource Recovery and the Environment (CORRE) and the US EPA (CORRE, 1991). Although the data are not from ash from the Hempstead ERF, the results are from state-of-the-art mass burn facilities, and should be applicable to the Hempstead ERF. The concentrations of dioxins and furans obtained in the CORRE study are reproduced in Table 2. These values were averaged, and then converted to toxic equivalents (TEs) of 2,3,7,8 TCDD using the toxic equivalent factors currently used by the USEPA¹ (US EPA, 1989). These values are reported in Table 2 in the column labeled "avg TE". The final two columns in Table 2 present the maximum and minimum toxic equivalents, which were calculated by using the maximum and minimum concentration for each congener (in the five samples), and then summing all of the individual maximum TEs and minimum TEs, respectively.

¹ The CORRE report used an earlier version of toxic equivalent factors.

The results of the revised calculation of dioxin toxic equivalents are shown in boxes at the bottom of the table. The average TE is 236 ppt (parts per trillion). The TEs ranged from 100 to 532 ppt. These values can be compared with the TE estimated in the CORRE report of 131 ppt and the "acceptable" concentration of TCDD in backyard soils of 1000 ppt (equivalently, 1 ppb). In other words, the total dioxin level observed in the ash studies had a toxic equivalent of 10-50% of the TCDD level that the US Centers for Disease Control determined to be acceptable for backyard soils, where exposure to young children would occur (Kimbrough et al., 1984).

Fly Ash Toxicity Studies

Fly ash, one component of the ash at the Brookhaven landfill, has been subjected to toxicity tests in animals. Alarie and co-workers (1989) exposed male guinea pigs to approximately 300 mg/m³ of fly ash resuspended in the air. (This is 1000 to 10,000 times higher than any foreseeable ambient exposure). The exposures were conducted for 6 hours/day for five consecutive days. Lung function tests of tidal volume were normal when the animals breathed normal levels of carbon dioxide, but were temporarily altered when high levels of carbon dioxide were in the air. This effect is observed with many other aerosols, and the authors concluded that it was unlikely that "low environmental exposure to the ashes would induce acute pulmonary effects."

Alarie and co-workers (1989) also observed that, at these high exposure levels, the concentrations of cadmium, lead and zinc were significantly elevated in the lungs compared to control animals. Mercury concentrations were somewhat elevated. Lead and cadmium were also somewhat elevated in the kidney and liver. Chromium was not elevated in any tissue examined. No effects of dioxins were observed, even though the male guinea pig is extremely sensitive to its effects.

Based on the methodology used by both the USEPA and NYS DEC for calculating reference doses (doses below which no adverse impacts are anticipated even in sensitive populations), this study would yield a reference dose of 300 µg/m³ for short term exposures to fly ash.²

Calculation of Acceptable Fugitive Dust Concentrations

The strategy for calculating acceptable fugitive dust concentrations at the landfill boundaries is to determine the amount of fugitive dust from the ash that will not cause exceedances of health based ambient air standards or guidelines. Standards and/or guidelines for dioxins and most of the metals identified in the previous section are listed in Table 3. Metals for which no guidelines have been developed are of low toxicity, and are not likely contribute to the health impacts of the ash. Ambient air guidelines for dioxins and most metals have

²The subchronic RfD calculation is based on the following uncertainty factors: 10 for LOAEL to NOAEL; 10 for extrapolating from animals to humans; and 10 for interindividual differences among humans.

been developed by New York State. The USEPA has issued a National Ambient Air Quality Standard (NAAQS) for lead, which is also enforced in New York. The USEPA has also issued regulations for boilers and industrial furnaces that include health based estimates of ambient air concentrations for several contaminants (USEPA, 1992).

New York State has developed short term guideline concentrations (SGCs) and annual guideline concentrations (AGCs) for toxic contaminants in ambient air (NYS DEC, 1991). These guidelines were developed to be protective of human health. The AGCs are based on cancer and noncancer health risks resulting from long term exposure to air contaminants. The AGCs for human carcinogens are based on ambient air concentrations that correspond to increased lifetime cancer risks of 1×10^{-6} . The AGCs for noncancer effects are developed such that no adverse effects are expected to result from the exposure, even for sensitive populations such as children and asthmatics. The SGCs are intended to protect against significant health and environmental effects associated with acute (1 hour) exposures to air contaminants. When available, New York State guidance concentrations are used as the basis of the fugitive dust calculations.

Table 4 summarizes the maximum permissible fugitive dust concentrations for annual and short term exposures for each contaminant. These values were calculated using the following equations:

$$[\text{Ann Fug.Dust}] = \frac{\text{AGC} \times 10^6}{[\text{Cont Ash}] \cdot 0.5}$$

$$[\text{Short Term Fug.Dust}] = \frac{\text{SGC} \times 10^6}{[\text{Cont Ash}]}$$

where:

[Fug. Dust] = concentration of fugitive dust ($\mu\text{g ash}/\text{m}^3$ air)

AGC = annual guidance concentration (avg $\mu\text{g cont}/\text{m}^3$ air)

SGC = short term guidance concentration (max $\mu\text{g cont}/\text{m}^3$ air)

[Cont Ash] = contaminant concentration in ash (mg cont./kg ash)

10^6 = conversion factor between μg and kg soil; and μg and mg of contaminant

The permissible annual concentration of fugitive dust is based on the average concentration of each contaminant, as summarized in Table 1. The permissible short term concentration is based on the highest concentration observed in the samples shown in Table 1. In addition, the annual concentration equation includes a factor of 0.5 in the denominator to account for the fact that the wind blows in different directions. An annual wind rose constructed from meteorological data at Brookhaven National Laboratory shows that the wind blows a maximum of 20% in any one direction and a maximum of 50% in the sum of any three adjacent directions (Figure 1). The factor of 0.5 represents this latter reduction. The short term equation does not consider wind direction. The results of these calculations are presented in Table 4.

Arsenic, nickel, and chromium limit the permissible annual fugitive dust concentration from ash to $20 \mu\text{g}/\text{m}^3$. Nickel limits the permissible short term (one hour) fugitive dust concentration from ash to $300 \mu\text{g}/\text{m}^3$. This value is above the national ambient air quality standard for particulate matter (PM10) annual average concentration of $50 \mu\text{g}/\text{m}^3$ and the 24 hour average maximum concentration of $150 \mu\text{g}/\text{m}^3$.

The assumption of the chromium species (chromium VI or chromium III) in the ash can make a difference in the outcome of the fugitive dust calculation. If there is less than the 3% chromium VI assumed in the calculation, then the arsenic and nickel concentration would continue to limit the annual permissible fugitive dust concentrations to $20 \mu\text{g}/\text{m}^3$. However, if there is more than 3% chromium VI in the ash, then the permissible concentration of fugitive dust will decrease. As stated previously, the concentration of chromium VI in the ash is probably substantially less than 3%, based on comparisons with fly ash from other incinerators.

Comparison with Fugitive Dust Measurements

Hahn et al. (1990) measured fugitive dust emissions during several ash-related activities at the landfill in Haverhill, Massachusetts that receives bottom and fly ash from the nearby Ogden Haverhill Associates Resource Recovery Facility. Based on this experimental study, it appears unlikely that $20 \mu\text{g}/\text{m}^3$ of ash-related fugitive dust will reach the landfill boundary if sufficient levels of ash moisture are maintained.

Among other experiments, Hahn et al. conducted real time measurements using monitors with nominal measurement cutoff sizes of $10 \mu\text{m}$. Thus, the particle sizes of concern with respect to inhalation were measured. Two monitors were placed on 8 foot berms that surrounded the active ash dumping cell on three sides in positions intended to maximize the source strength. In addition, one monitor was placed 300 feet upwind and another placed 1000 feet downwind of the active cell. All four monitors were approximately 3 feet above the ground surface. The monitoring was conducted in August, 1989 after a 5 day period without rain. For the period of monitoring, the average temperature was 74°F . and the average windspeed was 6 mph.

In the absence of ash-related activities, the background concentration of fugitive dust (PM10) was approximately $30 \mu\text{g}/\text{m}^3$ throughout the site with peak concentrations of $40\text{-}45 \mu\text{g}/\text{m}^3$. Comparison of the elemental profiles of the ash and the background fugitive dust levels showed them to be quite dissimilar, suggesting that the background fugitive dust was not due to ash-related materials. Neither the average nor the peak concentrations at the upwind and downwind monitoring sites appeared to be affected by any ash-related activities, which included dumping and compacting.

The following results were obtained during various ash-related activities at the two monitoring sites near the active cell:

Activity	Average ($\mu\text{g}/\text{m}^3$)	Maximum (5 sec interval) ($\mu\text{g}/\text{m}^3$)
ash dump	25-36	370
uncovered ash	20-28	238
tarp covering	38	578
tarp removal	44	108
ash compact/cover	35	170

Average levels of fugitive dust during ash dumping and compacting activities, and of uncovered ash did not differ appreciably from average background measurements. The maximum observed concentrations were 2-13 fold higher during ash-related activities than during background measurements. The highest 5 second peak concentration was observed during tarp covering, with the next highest occurring during ash dumping.

Ashfilling activities at the Haverhill facility differ somewhat from those at the Brookhaven facility. In Haverhill, ash is dumped into an area surrounded by three 8 foot high berms of cover material. The monitors were placed on top of the berm, and thus were 11 feet above the surface of the ash. At Brookhaven, ash is dumped directly onto a flat area on top of a hill. Thus, higher ash-related concentrations of fugitive dust may be observed during dumping and compacting if samples were taken at Brookhaven. In addition, ash at the Haverhill facility is completely covered with soil at the end of the work day. Daily cover is not practiced on the ash at Brookhaven, and thus higher fugitive dust concentrations may be observed. On the other hand, ash is not covered by tarps or other materials at Brookhaven, thus the peak concentrations associated with these activities would not be observed at Brookhaven.

The % moisture of the ash is an important parameter governing the generation of fugitive dust. The % moisture in the ash in the 3 ash dumping episodes measured in Haverhill ranged from 22 to 31%, with the highest maximum fugitive dust concentrations observed when the ash with 22% moisture was dumped. By contract, the moisture level of the ash received at Brookhaven is above 20%. Thus, during the ash dumping and compacting activities, there should be comparability between the Haverhill and Brookhaven sites with respect to this important parameter.

The results of the Haverhill landfill study indicate that no ash-related fugitive dust goes offsite, and the average concentration of ash-related fugitive dust at the active cell is negligible. However, short peaks of high fugitive dust do occur during ash-related activities such as dumping and compacting. The fugitive dust concentrations that would be observed at 3 feet above ground level near the active ash area in Brookhaven may be higher than observed in Haverhill, since the area is not bermed. The similarity also assumes that more than 20% moisture content is maintained in the ash at Brookhaven.

Potential Health Effects to Landfill Workers

Workers at the Brookhaven landfill and truck drivers transporting ash to the landfill will be exposed to higher concentrations of ash and its contaminants than members of the surrounding community. Workers in four job categories, with three different exposure concentration/duration profiles, can be identified:

- ash truck drivers and ash compactor drivers
- ash samplers, and
- other landfill workers.

Truck drivers and Compactor drivers

Ash truck drivers may be exposed to the ash while loading and unloading ash. Ash compactor drivers may be exposed while driving the compactors. During this exposure period, the drivers may come into contact with the ash via inhalation of fugitive dust. There may also be lesser exposures via dermal contact and inadvertent ingestion of the ash.

Dermal contact can cause adverse health effects in two ways: 1) contact can result in absorption through the skin and cause systemic toxicity and 2) contact can cause skin irritation. Metals have limited ability to be absorbed through the skin, and thus dermal contact with metals is not likely to result in systemic toxicity. Dermal exposure is a potential route of concern for dioxins. However, regulatory agencies have determined that 1 ppb dioxin in soil will not cause adverse effects even in children exposed to the material in their backyards. Since there is less than 1 ppb dioxin equivalents in the ash, and dermal contact will be considerably less than that of children in backyards, dermal exposures should not cause adverse systemic effects. There have been some reports of skin irritation among workers at waste-to-energy plants, apparently related to airborne ash (Edwin Holstein, M.D., personal communication). Although the airborne ash concentrations in these closed facilities are likely to be much higher than those encountered in an open air landfill, it is prudent to minimize dermal contact.

Inadvertent ingestion of the ash could occur if there were dermal contact with ash followed by hand to mouth activities such as smoking or eating. To reduce exposures by this route, work practices could include a ban on smoking and eating in the vicinity of the active ash dump area.

Inhalation of fugitive dust is the primary potential exposure route. If worker exposure is limited to the ash-related fugitive dust concentrations calculated to be permissible for offsite exposures, then there will be a substantial margin of safety for the workers. As discussed previously, for community exposures, annual average exposures to ash-related fugitive dust concentrations should be less than 20 $\mu\text{g}/\text{m}^3$ and peak one hour concentrations should not exceed 300 $\mu\text{g}/\text{m}^3$. Based on the Haverhill study, the annual average concentration should be readily achievable by maintaining more than 20% moisture content in the ash. Peak concentrations may be exceeded for short periods of time during

dumping and compacting activities, although the one hour averaging period should reduce the exposures to below $300 \mu\text{g}/\text{m}^3$.

These predictions should be confirmed by monitoring the exposures actually experienced by the drivers. The monitoring should be done through the use of personal air samplers. These are commonly used in industrial hygiene, and measure the air in the breathing zone of the workers rather than in the general vicinity of the activities.

Ash samplers

Ash samplers will have close contact with ash, but for short periods (less than 1 hour) at infrequent (once every 3 weeks) intervals. Ash exposure may occur by dermal, inhalation or ingestion routes. As discussed for the drivers, dermal exposure is not a source of concern for these materials with respect to systemic toxicity, although the ash may be an irritant. Inadvertent ingestion can be reduced by good hygiene practices, such as washing hands after sampling and not eating or smoking in the immediate vicinity of the ash. Inhalation exposure to ash should be lower than the $300 \mu\text{g}/\text{m}^3$ short term (one hour) guidance concentration if the sampling activity does not take place when ash dumping and compacting are being conducted in the vicinity.

Other landfill workers

Landfill workers who do not work near the ashfill may be exposed to fugitive dust from the ash while working at other portions of the landfill. In principle, ash exposure could occur throughout the work week, although in practice, the hilly topology of the landfill will limit dust exposures to a few areas in a few wind directions. The permissible fugitive dust levels calculated for fence-line exposures will be protective of other landfill workers, and, as discussed previously, should be readily achievable.

Conclusions Regarding Potential Health Impacts

Based on the calculations conducted here, if the annual average concentrations of ash-related fugitive dust are maintained below $20 \mu\text{g}/\text{m}^3$, and short term (one hour) excursions are kept below $300 \mu\text{g}/\text{m}^3$, there are no anticipated health impacts to the community or onsite workers. Total offsite fugitive dust concentrations must also remain in compliance with the federal particulate standards of $150 \mu\text{g}/\text{m}^3$ of respirable dust for a 24 hour period and $50 \mu\text{g}/\text{m}^3$ of respirable dust as an annual average.

The $300 \mu\text{g}/\text{m}^3$ short term limit was arrived at by two methods: 1) based on a comparison of ash contaminants to the appropriate SGC established by New York State; and 2) based on an experimental study of fly ash in guinea pigs. The availability of two independent methods to derive short term limits increases confidence in the results. In addition, the ash in the Brookhaven Landfill includes both fly ash and bottom ash. Since bottom ash has a lower

fraction of respirable particles and appears to contain lower concentrations of toxic contaminants than fly ash (NIOSH, 1990), a concentration that is protective against fly ash exposure should also be protective against exposure to combined fly ash and bottom ash.

The USEPA and other agencies use, as a "rule of thumb", a 10 fold decrease in reference concentrations to convert from subchronic to chronic exposure situations. Consistent with this, the annual average ash-related fugitive dust concentration of $20 \mu\text{g}/\text{m}^3$ is approximately 10 fold lower than the short term limit of $300 \mu\text{g}/\text{m}^3$, although these values were calculated by partially independent methods.

Comparison of the $20 \mu\text{g}/\text{m}^3$ annual ash-related fugitive dust limit and $300 \mu\text{g}/\text{m}^3$ ash-related short term limit with the concentrations measured at the Haverhill, MA facility indicate that ash-related fugitive dust concentrations are likely to be well below these concentrations both on at the landfill and offsite if sufficient ash moisture is maintained. The only exception is likely to be occasional short excursions above the $300 \mu\text{g}/\text{m}^3$ concentration during ash dumping and compacting at the site of the activity. However, based on the available information, worker exposure to concentrations above $300 \mu\text{g}/\text{m}^3$ should be controllable using existing protection technology.

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Table 1
Metal and Dioxin Concentrations in Ash From Hempstead ERF

	Mar-90 arith mean (3) mg/kg	Nov-90 sample 1B mg/kg	Nov-90 sample 2B mg/kg	Nov-90 sample 3B mg/kg	Nov-90 sample 4B mg/kg	Nov-90 sample 5B mg/kg	Arithmetic Mean 8 samples mg/kg	Est Mean Conc Soils in Eastern US* mg/kg
Aluminum	24567	20250	21070	22900	19300	18800	22002.6	57000.0
Antimony	67.2	12.5	13	27.7	106	430	98.9	0.8
Arsenic	16.8	20.8	18.5	13.2	54	16.3	21.7	7.4
Barium	527	440	474	423	466	666	506.3	420.0
Beryllium	nd	<1	<1	<1	<1	<1	<1	0.85
Cadmium	30.2	57.9	35.9	29.3	70.3	27.9	39.0	
Calcium	70500	76400	70050	70000	122000	86300	79531.3	6300.0
Chromium VI/III	54.5	77.2	94.3	66.1	81	92.9	71.9	52.0
Cobalt	8.8	NT	NT	NT	NT	NT	8.8	9.2
Copper	744	679	1900	1140	1060	1780	1098.9	22.0
Iron	23267	39900	47100	47300	39600	73300	39625.1	250000.0
Lead	1457	1440	2320	2530	3950	2200	2101.4	17.0
Magnesium	6600	NT	NT	NT	NT	NT	6600.0	4600.0
Manganese	523	NT	NT	NT	NT	NT	523.0	640.0
Mercury	16.5	10.8	3.48	16.1	19.6	0.98	12.6	0.1
Nickel	4745	92.2	75.8	196	83.4	147	1853.7	18.0
Potassium	3723	NT	NT	NT	NT	NT	3723.0	12000.0
Selenium	1.2	<1	<1	<1	<1	<1	<1	0.45
Silica as SiO ₂	2873	NT	NT	NT	NT	NT	2873.0	340000.0
Silicon	NT	<10	11.9	21.6	18.4	21.2	18.3	
Silver	36.5	5.3	6.1	6.4	13	5.4	18.2	
Sodium	6483	NT	NT	NT	NT	NT	6483.0	7800.0
Thallium	ND	<5	<5	<5	<5	<5	<5	
Tin	113	128	148	159	646	213	204.1	1.5
Vanadium	20.1	NT	NT	NT	NT	NT	20.1	66.0
Zinc	2633	4220	3390	2710	4480	3110	3226.1	52.0
Dioxin TEQ							2.36E-04	

Reference: Shacklette and Boerngen, 1984 USGS Professional Paper 1270.

Table 2
Chlorinated Dioxins and Furans in Ash from Municipal Waste Combustors

	I-TEFs/89	Dioxin in Ash	Dioxin in Ash	Dioxin in Ash	Dioxin in Ash	Dioxin in Ash	Avg TE	Max TE	Min TE
		CORRE-ZA	CORRE-ZB	CORRE-ZC	CORRE-ZD	CORRE-ZE	CORRE	ppt	ppt
		ppt	ppt	ppt	ppt	ppt	ppt		
2,3,7,8-TCDD	1	10	24	16	35	10	17.0	35	10
Other TCDD	0	206	351	281	541	120	0.0	0	0
2,3,7,8-TCDF	0.1	263	617	236	626	176	33.1	62.6	17.6
Other TCDF	0	1688	3721	1208	2633	1136	0.0	0	0
1,2,3,7,8-PeCDD	0.5	33	118	71	ND	35	22.4	59	16.5
Other PeCDD	0	317	759	1051	1910	248	0.0	0	0
1,2,3,7,8-PeCDF	0.05	61	194	64	151	52	4.6	9.7	2.6
2,3,4,7,8-PeCDF	0.5	46	162	56	171	43	43.2	85.5	21.5
Other PeCDF	0	484	1527	607	1736	448	0.0	0	0
1,2,3,4,7,8-HxCDD	0.1	12	40	66	86	11	4.1	8.6	1.1
1,2,3,6,7,8-HxCDD	0.1	17	34	90	148	11	5.7	14.8	1.1
1,2,3,7,8,9- HxCDD	0.1	28	79	120	194	22	8.3	19.4	2.2
Other HxCDD	0	154	342	925	853	104	0.0	0	0
1,2,3,4,7,8-HxCDF	0.1	74	336	218	654	95	26.1	65.4	7.4
1,2,3,6,7,8-HxCDF	0.1	131	524	279	660	134	31.9	66	13.1
1,2,3,7,8,9- HxCDF	0.1	36	127	193	479	45	16.9	47.9	3.6
2,3,4,6,7,8-HxCDF	0.1	5	54	70	124	20	5.4	12.4	0.5
Other HxCDF	0	281	939	635	1686	280	0.0	0	0
1,2,3,4,6,7,8-HpCDD	0.01	159	319	1849	1555	122	7.7	18.49	1.22
Other Hp CDD	0	140	288	1511	1384	0	0.0	0	0
1,2,3,4,6,7,8-HpCDF	0.01	139	539	653	1842	155	6.4	18.42	1.39
1,2,3,4,7,8,9-HpCDF	0.01	8	48	83	119	16	0.5	1.19	0.08
Other Hp CDF	0	51	197	254	384	44	0.0	0	0
OCDD	0.001	313	544	6906	4519	294	2.5	6.906	0.294
OCDF	0.001	66	243	563	893	59	0.4	0.893	0.059

avg total TE	236.0	532.2	100.2
		all maxes	all mins

Source: Coalition on Resource Recovery and The Environment (CORRE). 1990.
Characterization of Municipal Waste Combustion Ash, Ash Extracts, and Leachates
EPA 530-SW-90-029A

CORRE avg total TE 131.4

Table 3
Guidelines and Standards for Ambient Air

	NYS SGC*	NYS AGC*	Other Ambient Air Stds or Guides	Source
	µg/m3	µg/m3	µg/m3	
Aluminum				
Antimony	120.0	1.2E+00	0.3	BIF ⁻
Arsenic	0.2	2.3E-04	2.30E-03	BIF ⁻
Barium	120.0	5.0E-01	50	BIF ⁻
Beryllium	0.05	4.0E-04	0.01	NAAQS ^{***} ; NYSS
Cadmium	0.2	5.0E-04		
Calcium				
Chromium	0.1/120	2E-5/0.1		
Cobalt	12.0	1.2E-01		
Copper	240.0	2.4E+00		
Iron				
Lead			1.5	NAAQS ^{**}
Magnesium				
Manganese				
Mercury	12.0	3.0E-01		
Nickel	1.5	2.0E-02		
Potassium				
Selenium	48	4.8E-01		
Silica as SiO2				
Silicon				
Silver			3	BIF ⁻
Sodium				
Thallium	24	2.4E-01		
Tin				
Vanadium	100.0	2.0E-01		
Zinc	150.0	5.0E+01		
Dioxin TEQ		3.0E-08		

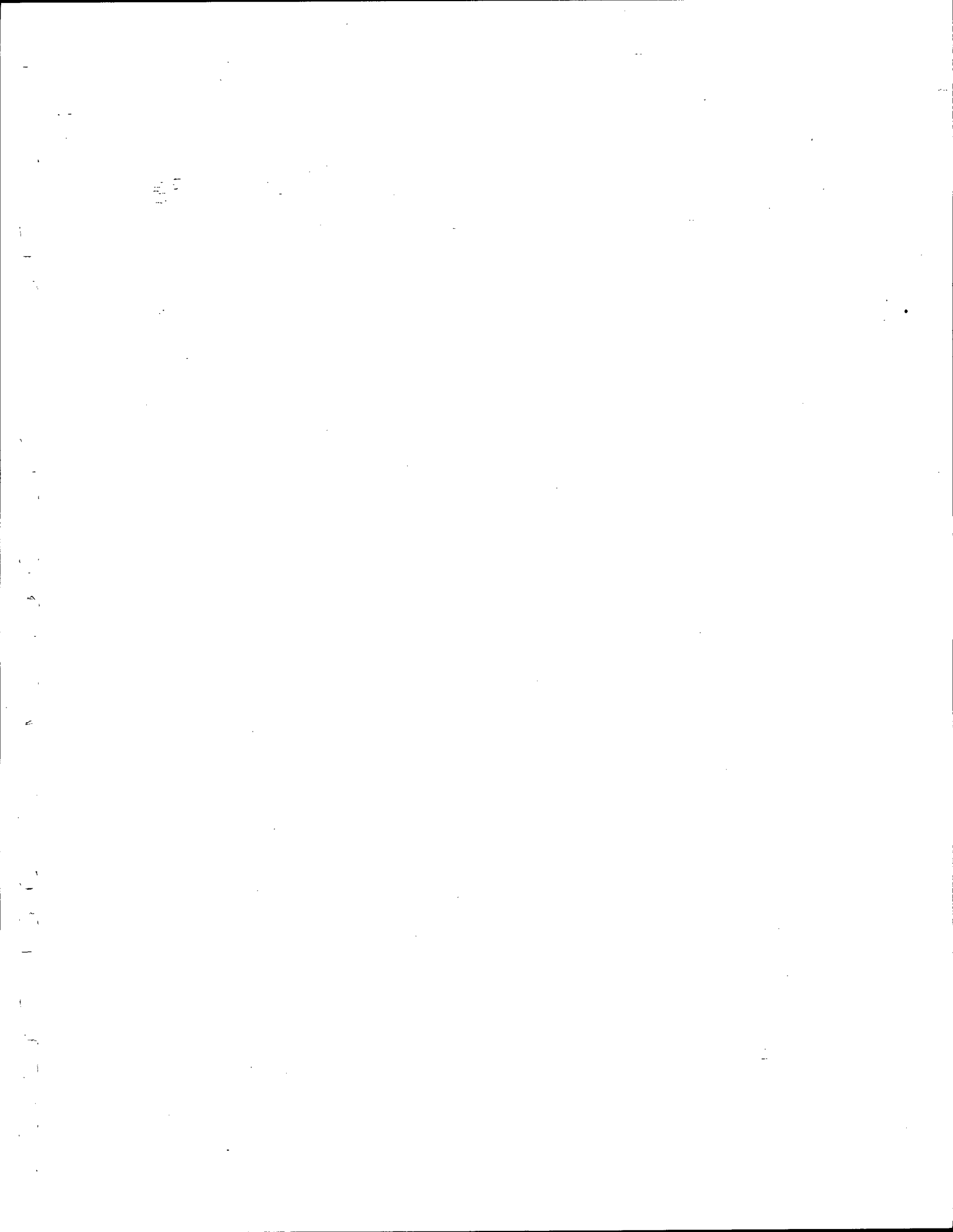
* SGC = short term guideline concentration; AGC = annual guideline concentration
Source: Draft New York State Air Guide -1, NYS DEC, 1991 edition

** NAAQS = National Ambient Air Quality Standard; NYSS = New York State Standard

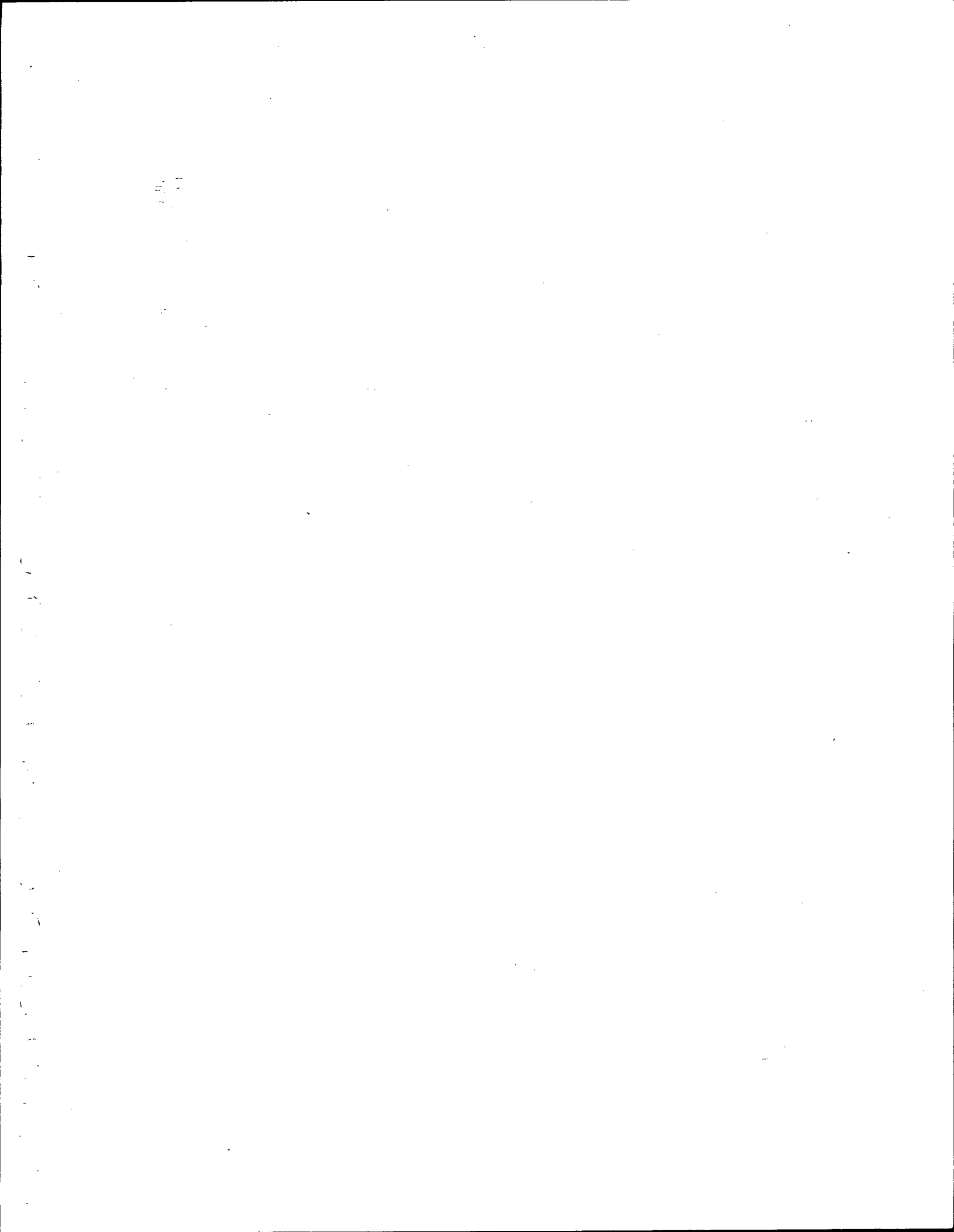
^ US EPA 1992. Technical Implementation Document for EPA's Boiler and Industrial Furnace Regulations; EPA-530-R-92-011

**Table 4
Fugitive Dust Limits**

	Permissible Annual Fugitive Dust Conc $\mu\text{g}/\text{m}^3$	Permissible Short Term Fugitive Dust Conc $\mu\text{g}/\text{m}^3$	Comments
Aluminum			
Antimony	2E+04	3E+05	
Arsenic	2E+01	4E+03	
Barium	2E+03	2E+05	
Beryllium	8E+02	5E+04	
Cadmium	3E+01	3E+03	
Calcium			
Chromium VI/III	2E+01	5E+04	assume 3% CrVI
Cobalt	3E+04	1E+06	
Copper	4E+03	1E+05	
Iron			
Lead	1E+03		Based on NAAQS
Magnesium			
Manganese			
Mercury	5E+04	6E+05	
Nickel	2E+01	3E+02	
Potassium			
Selenium	1E+06	4E+07	
Silica as SiO ₂			
Silicon			
Silver	3E+05		Based on RAC
Sodium			
Thallium	1E+05	5E+06	
Tin			
Vanadium	2E+04	5E+06	
Zinc	3E+04	3E+04	
Dioxin TEQ	3E+02		



APPENDIX 11
PROPOSED AIR MONITORING PROGRAM



TOWN OF BROOKHAVEN AIR MONITORING PLAN

A PRE-PROPOSAL

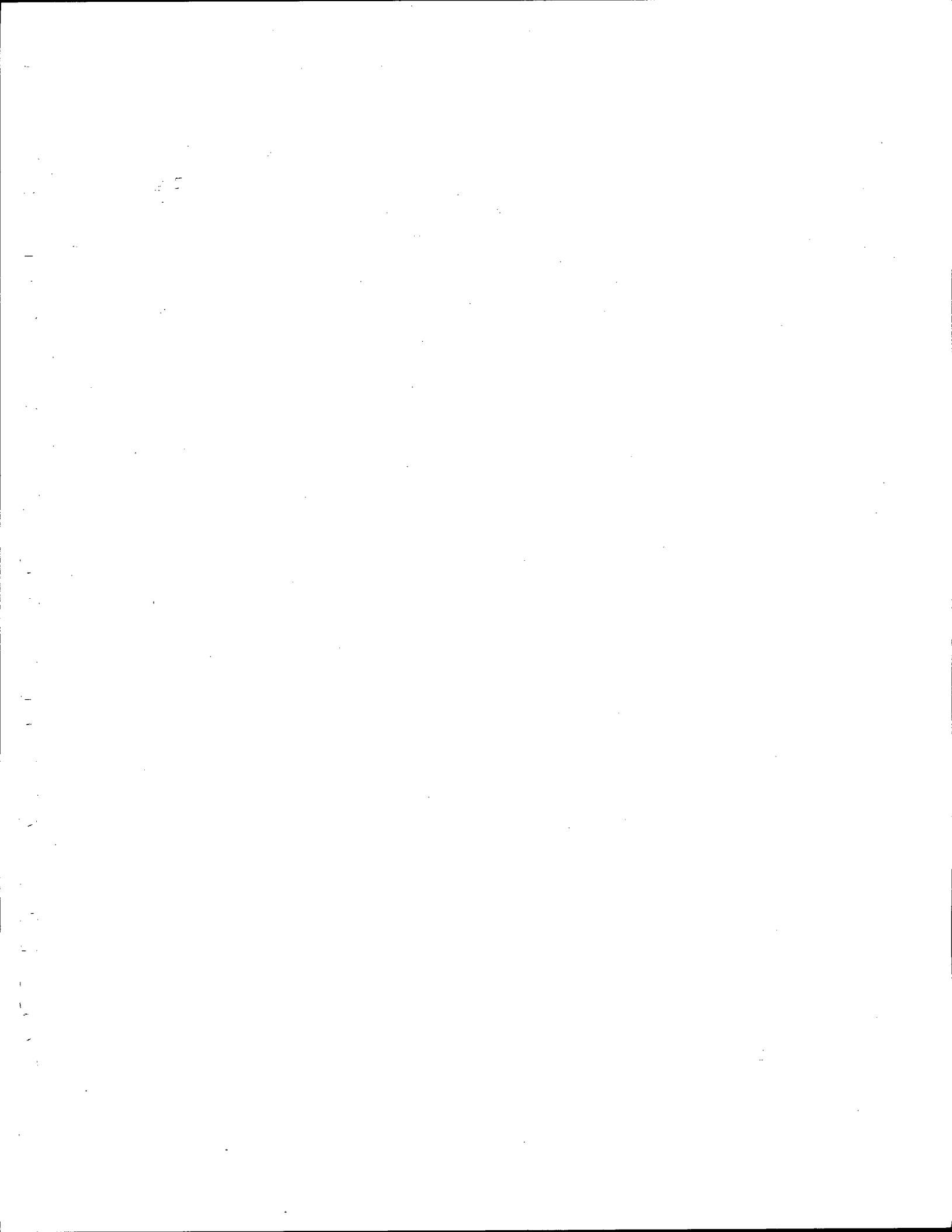
PREPARED FOR

**DEPARTMENT OF SOLID WASTE MANAGEMENT
TOWN OF BROOKHAVEN**

PREPARED BY

**WASTE MANAGEMENT INSTITUTE
MARINE SCIENCES RESEARCH CENTER
STATE UNIVERSITY OF NEW YORK
STONY BROOK, NEW YORK 11794-5000**

DECEMBER 1992



INTRODUCTION

The Town of Brookhaven's Solid Waste Management Facility in the hamlet of Brookhaven, Suffolk County, New York, is a 534 acre site which contains an 80 acre landfill, among other waste management structures. Three cells of the landfill are currently undergoing capping and closure; the fourth, Cell 4, is being used for the disposal of approximately 800 tons per day (tpd) of incineration ash from the Town of Hempstead Waste-To-Energy (WTE) plant at one face, and approximately 1400 tpd of construction and demolition (C&D) residues from local C&D recyclers, sewage sludge incineration ash from the Southwest Sewer District Bergen Point Sewage Treatment Plant, car shredder fluff, and that portion of the Town's municipal solid waste (MSW) not being transported to the Town of Hempstead's WTE plant at the other face. Cell 4 is expected to remain operational for approximately a year and a half.

With the closure of the landfill imminent, the Town has embarked upon the permitting process to allow the Town to open Cell 5 adjacent to the present landfill on the western portion of the Facility site. The Cell 5 landfill would be a 78-acre landfill reserved for the disposal of process residues from waste disposal facilities utilized by the Town. These are expected to include incinerator ash from the Town of Hempstead's WTE plant, process residues from the Town's Materials Recovery Facility located on the Facility site, car shredder fluff and C&D residues from private recyclers, sewage sludge incineration ash from Suffolk County, and possibly process residues from a privately-operated MSW composting facility. Part of the permitting process for this new cell is the issuance of a Draft Environmental Impact Statement (DEIS), and public commenting upon the DEIS. The DEIS for Cell 5 was issued October 20, 1992; the comment period on the

DEIS closed on December 4, 1992.

A major public concern expressed in the comment period for Cell 5 was the public health consequences of particulate and gaseous emissions from the proposed new cell. Commenters stated that the current operations in Cell 4 result in the release of materials which have affected the health of the surrounding community.

To address the effect of landfill emissions of gasses and particulates on the community, the Waste Management Institute (part of the Marine Sciences Research Center at the State University of New York at Stony Brook) is proposing the establishment of an air monitoring network to the Town of Brookhaven Department of Waste Management. The monitoring program would consist of three mobile monitoring stations which would be used to routinely test for particulates every two weeks, volatile gasses associated with landfills, mercury, and dioxins and furans every quarter, over the period of one year. Two of the units would be located on the Facility grounds (one upwind, the other downwind of Cell 4), and the other would be at a fixed location off the Facility site. At the conclusion of this first year of monitoring, at the discretion of the Town, the program could be modified and extended for another year. The Institute is suggesting that the results from this air quality monitoring of Cell 4 might be applied to predict effects on air quality from the proposed Cell 5; the proposed operating plan for Cell 5 might be modified to reduce or eliminate emissions detected in the course of monitoring Cell 4.

The Institute is proposing an annual cost of \$108,000 for this service; \$45,000 of that cost would be for analytical services. It should be noted that the reduction of tests for dioxins and furans from four events to two events would reduce the analytical budget by \$9,000. The New York State Department of Health and WMI would be the analytical laboratories for this testing; both have

state and federal approvals and licenses to conduct the proposed testing.

SCOPE OF WORK

Fugitive dust emissions from the Town of Brookhaven landfill area will be monitored using upwind-downwind sampling methods. The upwind-downwind method quantifies emissions from a source or sources as the difference between the concentration of pollutants measured in the ambient air approaching (i.e., upwind) and leaving (i.e., downwind) the source site.

This approach is influenced by meteorological conditions and requires a wind relatively consistent in direction and velocity throughout the sampling period as well as conditions of temperature, humidity and ground moisture representative of normal ambient conditions. Given accurate wind speed and direction data at or near the site, particulate concentrations at known sampling locations can be used in conjunction with emission dispersion equations to back-calculate the source strength of the emission.

As part of the monitoring effort, three air sampling sites will be selected; two within the parameters of the landfill and one outside the landfill boundary. At each site, measurements of total suspended particles (TSP), the inorganic composition of the particles, the concentrations of volatile mercury, volatile organics, including dioxins and furans along with conventional gaseous emissions such as methane, sulfur dioxide and hydrogen sulfide will be undertaken.

Air Sampling Techniques

Researchers at the Wadsworth Center for Laboratories and Research at the New York State Department of Health in Albany, New York will be conducting the analytical analyses of the samples. Four different techniques will be employed in evaluating the

chemical characteristics of the emissions in the landfill environment.

Collection of total suspended particulates (TSP) for evaluation of suspended metals and salts will be evaluated by installing a pre-weighted filter to a high volume air sampler. An 8" x 10" EPM 2000, 0.3 micron filter is used in a standard holder. A sampling period of no less than eight (8) hours should insure that a minimum of 350 m³ of air will have been sampled. After determining the total amount of suspended particles, the particulates will be digested and analyzed by atomic absorption techniques to evaluate the chemical composition of the particles.

Volatile mercury will also be determined through the use of a potassium permanganate () impinger connected to a low volume air sampler. This method draws a known volume of air through a solution of KMnO₄ which adsorbs and stabilizes Hg. This solution is then analyzed by atomic absorption techniques to determine the concentration of Hg in the sample.

The high volume air samplers will be modified to allow the collection of dioxins and furans in accordance with New York State Department of Health protocols (NYSDOH, 1989). This method consists of adding a threaded, cylindrical stainless steel extension to the throat of the high volume air sampler. The 8 cm diameter extension contains a 12.5 cm long piece of polyurethane foam (precleaned with acetone, toluene and hexane, then vacuum dried) which is replaced in place by a stainless steel support screen. As air is pulled through the high volume air sampler, gaseous dioxins and furans are collected on the polyurethane foam while particulates are collected on the filter. After sampling, the stainless steel cylinder is removed and capped at both ends with threaded stainless steel caps fitted with viton seals.

Upon receipt of the cylinders in Albany, the dioxins and furans associated with the polyurethane foam will be extracted, cleaned-

up, and analyzed using high resolution MS/GC techniques. The details of the analytical protocol are detailed in the Department of Health publication entitled "Analysis of Ambient Air Using a PUF HiVol Sampler". All tetra- through octa- dioxins and furans will be monitored.

Collection and analysis of volatile organic compounds will be undertaken using the protocols established by the New York State Department of Health (NYSDOH, 1986). This method covers a wide range of both aromatic and halogenated volatile organic compounds. These constituents are trapped on a Porapak-N cartridge by passing a known volume of air through the cartridge. Volatiles are absorbed within the cartridge and upon arrival in Albany are then eluted from the cartridge with a known volume of methanol. Aliquots of the methanolic eluate are injected into a gas chromatograph system using electron capture detector (ECD) or Hall detector (HECD), and photoionization detector (PID).

Detection limits are $1 \mu\text{g}/\text{m}^3$ for chlorinated aromatics by EDC, $10 \mu\text{g}/\text{m}^3$ for chlorinated organics by HECD, and $10 \mu\text{g}/\text{m}^3$ for aromatics by PID.

Finally, the United States Environmental Protection Agency (USEPA) canister procedure (USEPA, 1988) will be undertaken in order to collect a full range of volatile organics and conventional air emissions for analysis. Compendium method TO-14, "The determination of volatile organic compounds (VOC's) in ambient air using Summa Passivative canister sampling and gas chromatographic analysis" will be employed to verify the results of the other collection and analytical procedures, expand the list of organic compounds able to be detected and identify the concentrations of conventional air emissions.

Frequency of Sampling Events

It is suggested that total suspended particulates be

measured at the three sites twice each month during the period of this investigation. Every three months, the entire analytical program will be executed at all sites. The following table outlines the proposed sampling and analytical effort.

Parameter	Number of Sites	Annual Events	Total Analyses
TSP	3	24	72
Particulate Metals	3	4	12
Volatile Mercury	3	4	12
Dioxins/Furans	3	4	12
Volatile Organic	3	4	12
Volatile Organic and Conventional Emissions	3	4	12

Proposed Budget

A budget of approximately \$108,000 is requested to accomplish the proposed scope of work. The NYS Dept. of Health sub-contract for analytical services amounts to \$45,000, representing 41% of all expenditures. Salaries and fringe benefits represent 29% (\$31,675) of the projected costs.

Most of the equipment necessary to accomplish the air monitoring program is currently available at WMI; however, outdoor enclosures for the high volume samplers will need to be purchased in addition to three low volume pumps. Funds are requested to permit a modest upgrade of the computer system needed to evaluate the analytical data and perform air modelling evaluations from the data.

The cost of filter papers, chemicals and other expendable are reflected by the request of \$3,000 for supplies. Travel to the project sites and to Albany require the request for \$4,000 in travel funds. In addition, the cost of one meeting between

University personnel, Dept. of Health staff and Brookhaven officials to review the results of the investigation are also reflected in this budget category.

Miscellaneous expenses reflect the need to provide tuition reimbursement for the graduate student working on this project along with appropriate office and publication costs.

Finally, the Research Foundation requires that indirect costs be reflected in all research proposals. Fortunately, the majority of this investigation is off campus thereby reducing the overall impact of this budget item.

Proposed Budget

	Cost
Personnel	
Principle Investigator (20% effort)	\$ 12,500
Graduate Student (100% effort)	15,000
Fringe Benefits	
Principal Investigator (31%)	3,875
Graduate Student (2%)	300
Equipment	
Air Monitoring Equipment	4,000
Computer Equipment	3,000
Supplies	3,000
Travel	4,000
Dept of Health Sub-contract	45,000
Miscellaneous	
Tuition Reimbursement for Grad Student	2,500
Phones, Xerox, etc.	500
Report Preparation	750
Total Direct Costs	94,425
Indirect Costs	
Total Direct Cost, less equipment and subcontract	
25% on campus (45.1%)	4,783
75 % off campus(28%)	8,909
Total Requested	\$108,117

APPENDIX 12
FUGITIVE ASH EMISSION STUDIES

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**APPENDIX 12
FUGITIVE ASH EMISSION STUDIES**

**COMPARISON OF STUDIES REFERENCED TO CONDITIONS AT THE
LANDFILL EXPANSION AREA**

Wehran has evaluated the relevance and similarity of the MRI and Hahn studies to the proposed Brookhaven landfill expansion. The following sections compare the major elements of concern.

Source, Type and Volume of Substances Landfilled

MRI: Data were based on a survey of 139 municipal waste combustion facilities, and a follow-up survey of landfill operators receiving waste from the facilities identified in the first survey. Characteristics of the facilities surveyed span a wide range. For example, the amount of waste accepted for landfilling ranged from 600 to 3,744,000 tons per year (2 to 12,000 tons per day based on 6 days per week operation). Waste types included municipal solid waste, ash from municipal waste combustion, and industrial solid waste. Some landfills shared their site with a combustor, while others did not.

Hahn: Study focused on a facility (Ogden, Haverhill, MA) where municipal solid waste is combusted and the ash is landfilled on site. Ogden Haverhill was designed as a resource recovery facility adjacent to an existing landfill. The new landfill component is an ash monofill and is designed to process 380 tons per day of ash.

Brookhaven: Various residues from recycling facilities and small amounts of unprocessed solid waste (670 tons/day) and ERF Ash (630 tons/day). Waste and ash will be landfilled separately. There is no waste combustion facility on site.

Climatological Conditions

MRI: Wide variation depending on site location throughout the continental US.

Hahn: Northeastern US climatology. During the monitoring program, meteorology was measured on site to ensure proper monitoring locations and compatibility with AP-42 modeling assumptions (See Response 7.5.8 in the main text of this FEIS).

Brookhaven: Northeastern US climatology with marine influence.

Operational Conditions at Site

MRI: The report contains statistical summaries, and does not provide specific information on cell layout (monofill or mixed waste) or on the coverage techniques used (e.g., daily cover) at each facility. The survey was designed to provide wide coverage of the diversity of facilities. Daily cover is required at most facilities, although some permitting agencies do not require daily cover on monofill sites. On-site roadways and vehicle operating practices also vary widely depending on the specific physical configuration of the facility. The conditions expected at Brookhaven appear to fall within the range of circumstances and variables analyzed by MRI. Thus, the MRI conclusions relating to site conditions appear applicable to Brookhaven.

Hahn: The site is to be operated as an ash monofill. It is located adjacent to an existing landfill, as at Brookhaven. Also adjacent is a resource recovery plant. Ash from the combustor is loaded by conveyors into dump trucks inside the ash handling building. The trucks transport the ash to the landfill. A bulldozer at the monofill area spreads the ash after it has been dumped at the monofill. The facility has an ash management plan to minimize particulate emissions. Provisions in the plan include maintaining the ash in a moist state, use of trucks with moisture-tight beds and tight-fitting metal covers, minimizing the size of the working

face, daily cover of the working face, minimization of vehicle traffic over uncovered ash already landfilled, and a water spray truck to suppress road dust. With the exception of daily cover, these mitigation measures are comparable to those proposed at Brookhaven.

Brookhaven: The project contemplates expansion of the Existing Landfill. There is no combustion facility located at the landfill site. The expansion will accept ash from the Hempstead ERF, and mixed recycling, C&D process residue, and small amounts of municipal solid waste from the Town of Brookhaven. The ash will arrive in trucks with moisture-tight, covered containers and will be deposited in separate sections of the Landfill Expansion Area. The ash and other wastestream components will not be mixed, and will be disposed of separately. Mitigation measures for fugitive emissions will include maintaining the ash in a moist state until landfilled, use of moisture-tight ash containers with tight-fitting covers, minimization of the size of the working face, daily cover of areas that are potential sources of odor, and a use of water spray truck to suppress road dust.

Assumptions and Methodology for Estimating Particulate Emissions

MRI: Particulate emissions were estimated using the method set forth in the USEPA document AP-42. (See Response 7.5.8 in the main body of the FEIS). The AP-42 calculations were incorporated into the MRI model, along with other algorithms for estimating emissions from the various potential sources (e.g., the combustor).

Hahn: An on-site monitoring program was performed to measure actual particulate concentrations produced by ash disposal activities. Four sampling locations were selected: two at the active cell within 10 to 20 feet of the ash disposal zone, one approximately 300 feet upwind to assess facility operations not associated with ash disposal, and one approximately 1,000 feet downwind to assess any potential off-site

migration of emissions. Particulate measurements were made on both a time-weighted and "real-time" basis. The time-weighted measurements included both Total Suspended Particulates (TSP) and particle size distributions. The TSP samples were analyzed by X-ray fluorescence for elemental content, and the results compared to samples of ash and cover material. Meteorology also was measured on site during the monitoring program.

To compare actual impacts to modeled impacts, emissions were predicted using AP-42 procedures. The measured values for on-site meteorological and operational variables were used in the AP-42 equations. The Hahn study concluded:

In reality, the measured levels of fugitive ash dust actually measured in the field program were significantly less than the levels predicted by the use of the AP-42 equations. Even assuming that all of the particulate measured at the peaks was derived from ash (i.e., that none was ambient background and none was disturbed cover or cell sidewall material), the levels of fugitive ash emissions observed were significantly less than the levels predicted by the AP-42 equation. If ambient background levels are factored in the results would be reduced beyond the detection or precision limits of the measurement technology, and far less than the levels used in the ash health risk assessment, which, even with the much higher levels of emissions [predicted by AP-42], was already in the range of only one in a million risk.

Brookhaven: The assessment in the DEIS was based on the results of the MRI and Hahn studies.

Potential Particulate Emission Characteristics for Ash Disposal

MRI: Samples of ash and ash-containing materials were analyzed as part of the MRI study. Data on ash characteristics from these analyses and from other ash studies in the literature were incorporated into the MRI model. The results of the modeling suggest that particulate emissions tend to be lower at the monofills surveyed than at the MSW facilities. The major factors contributing to this result were differences in on-site haul roads, vehicles, and traffic volumes for a given ash quantity. Accordingly, the

mitigation measures proposed for the Brookhaven Landfill Expansion Area include appropriate controls on vehicle traffic.

Hahn: Ash is delivered to the landfill in a moist state that tends not to generate dust. Field observations during the monitoring program indicated that the measured peak particulate concentrations occurred due to disturbance of cell sidewall or cover material, rather than as a result of the ash being disposed. Comparison of the elemental profiles of the samples indicated that the content of the measured total suspended particulates was not similar to that of ash. This suggests that the contribution of ash emissions to total particulate is small.

Brookhaven: The assessment in the DEIS was based on the results of the MRI and Hahn studies, and the characteristics of the ERF Ash produced at the Hempstead ERF.

Location and Number of Sensitive Receptors

MRI: Actual receptors varied depending on facility. "Worst cases" receptors located at the facility property boundary and 100 meters beyond the property boundary were used in modeling.

Hahn: The Merrimack River surrounds the facility on three sides. Residential land use predominates across the river. An interstate highway abuts the fourth side, with commercial/industrial land use beyond. The nearest land-based location with public access is about 500 feet from the property boundary.

Brookhaven: The nearest receptors are residences just beyond the western property boundary, but about 800 to 1,000 feet from the perimeter access road and working areas. More distant receptors include commercial, industrial, and recreational land uses.

COMPARISON OF MODELING ASSUMPTIONS IN THE MRI STUDY TO CONDITIONS AT LANDFILL EXPANSION AREA

The first full paragraph on page 4-14 of the DEIS suggested that the MRI model overestimates the impacts to be expected for the Brookhaven Landfill Expansion Area, because the assumptions in the MRI model are based on conditions which differ from the conditions expected to be encountered at the Brookhaven site. The comment asked that the FEIS explain the assumptions of the specific aspects of the MRI model which are not comparable to the Landfill Expansion Area.

The MRI report assessed inhalation risk from a wide variety of facilities. The distributions of values for numerous variables were accounted for in the modeling. Linear regressions were used to specify relationships among distributions of key variables. Distribution sampling (Monte Carlo) techniques were then used in the modeling to account for the variances in these distributions.

A hypothetical "average" facility would be modeled with average values of the modeling variables, and would produce an average level of risk for the facilities studied. A facility with lower values of variables associated with inhalation risk would produce a relatively low level of risk in the MRI model. Among the modeling variables which affect risk results are the presence of a combustion facility, silt content of unpaved road surfaces, traffic volume on unpaved haul roads, and the relative proportions of municipal solid waste (MSW) and ash transported and deposited at a given location.

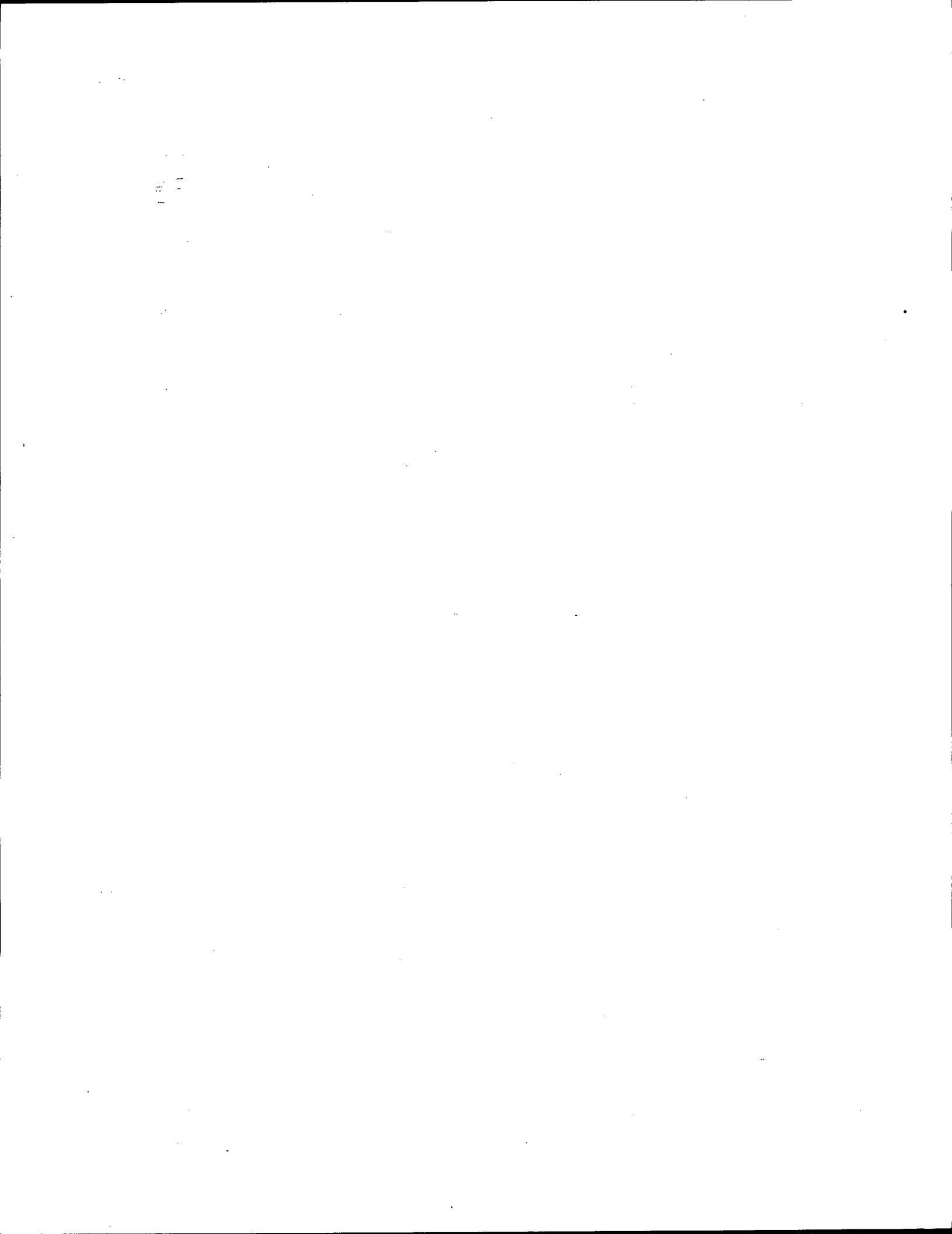
Many of the facilities studied by MRI combined a combustion facility and landfill on the same site. The Brookhaven Waste Management Facility Site does not include a waste combustion facility. Therefore, the potential risks associated with waste combustion are not present at the Brookhaven site.

The MRI study concluded that a major contributor to inhalation risk at landfills is fugitive dust generated by vehicle travel on unpaved haul roads. Emissions are highest at facilities where vehicles carrying ash and MSW use the same haul routes and active cell areas, and other site traffic is unrestricted, because of the greater combined traffic volume over a given road surface. Emissions decrease to the extent that haul routes for MSW and ash are separate. Emissions also are lower for facilities that have a lower ratio of MSW to ash disposed, primarily because of differences in traffic volumes.

At the Landfill Expansion Area, over half of the waste disposed will be ash (tonnage basis). The active cell areas for ash and for other waste will be separate. The access routes to each active cell area will be restricted. The MRI study indicates that these features would reduce the likelihood of fugitive dust emissions. As a result, conditions at Brookhaven are expected to correspond to a relatively low risk scenario in the MRI model.

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**APPENDIX 13
DEEP FLOW RECHARGE ANALYSIS**



APPENDIX 13 DEEP FLOW RECHARGE ANALYSIS

The deep flow recharge area is defined in the Long Island Landfill Law (ECL-27-0704) as consisting of Hydrogeologic Zones I, II and III which were developed as part of the "Long Island Comprehensive Waste Treatment Management Plan" (LI 208 Study, 1978). According to this report, Cell 5 lies 1.7 miles south and 3,500 feet east of the deep flow recharge boundary in a transitional area between recharge and discharge. This determination, with which the NYSDEC concurs (See Appendix 20), constitutes compliance with the Long Island Landfill Law.

Although not required under the Long Island Landfill Law, groundwater elevation measurements were obtained from two Upper Glacial and Magothy aquifer well clusters in the area of the Landfill Expansion, one located 2,500 feet east, and 200 feet immediately downgradient of the Existing Landfill, and the other just northeast of the Existing Landfill. The data from those well clusters indicates a fluctuation between slight recharge and slight discharge between the two aquifers, depending upon the time of data collection. This variation shows that this area, including the Landfill Expansion Area, is located south of the deep flow recharge boundary, as stated in the Long Island 208 study, in the transition/horizontal flow area between the deep flow zone and the discharge zone.

Monthly groundwater level measurements are currently being collected as part of the hydrogeologic investigation for the Landfill Expansion Area, including measurements from the Upper Glacial and Magothy aquifer clusters installed during the proposed landfill investigation. A summary of available data and the quantification of vertical flow between the Upper Glacial aquifer and upper portion of the Magothy formation at the downgradient edge of the Landfill Expansion Area for the months of August, September, October, and November, 1992 (MW-2S, MW-2D and MW-11M) are presented below.

Monitoring	<u>Groundwater Elevation (msl)</u>			
<u>Well Location</u>	<u>8/17/92</u>	<u>9/29/92</u>	<u>10/16/92</u>	<u>11/23/92</u>
MW-2S	24.56	24.22	24.05	23.78
MW-2D	24.45	24.24	24.07	23.78
MW-11M	23.89	23.78	23.61	23.38

<u>Well Cluster</u>	<u>Difference in Water Level Elevation (feet)</u>				<u>Vertical Hydraulic Gradient (ft/ft)</u>			
	<u>8/17/92</u>	<u>9/29/92</u>	<u>10/16/92</u>	<u>11/23/92</u>	<u>8/17/92</u>	<u>9/29/92</u>	<u>10/16/92</u>	<u>11/23/92</u>
Shallow and Deep Upper Glacial Wells MW-2S and MW-2D*	0.11-	0.02+	0.02+	0	0.001-	0.0002+	0.0002+	0

<u>Well Cluster</u>	<u>Difference in Water Level Elevation (feet)</u>				<u>Vertical Hydraulic Gradient (ft/ft)</u>			
	<u>8/17/92</u>	<u>9/29/92</u>	<u>10/16/92</u>	<u>11/23/92</u>	<u>8/17/92</u>	<u>9/29/92</u>	<u>10/16/92</u>	<u>11/23/92</u>
Deep Upper Glacial and Magothy Wells MW-2D and MW-11D**	0.56-	0.46-	0.46-	0.4-	0.006-	0.005-	0.005-	0.004-

* Vertical gradient calculated by dividing the head difference by the distance from the top of the water table to the midpoint of the deep well screen interval.

** Vertical gradient calculated by dividing the head difference by the distance between the midpoint of the two well screens.

As shown above, the vertical gradient within the Upper Glacial aquifer at monitoring well Cluster 2 ranges from a downward gradient of 0.001 to an upward gradient of 0.0002 feet of head loss per vertical foot for the four months of data collected. This compares to a horizontal gradient of 1.68×10^{-3} feet of head loss per horizontal foot as presented for the groundwater elevation data collected on 8/17/92. Using a porosity of 30 percent for well sorted sands and a hydraulic conductivity, value of 271 ft/day (based upon pumping test results), horizontal groundwater velocity in the Upper Glacial aquifer in the proximity of Cluster 2 averages 1.5 ft/day or 550 ft/year for the limited data available. Based upon an anisotropic ratio of 10:1, available from the literature, the vertical groundwater velocity in the Upper Glacial aquifer ranges between 0.09 ft/day (33 ft/year) in a downward direction to 0.02 ft/day (7 ft/year) in an upward direction for the months

in which data is available. These trends are expected to continue for the remaining months of the hydrogeologic investigation.

The ratio between the horizontal and vertical groundwater velocities in the Upper Glacial aquifer in the proximity of monitoring well Cluster 2, is 16:1 with the horizontal component of groundwater flow predominating.

Using a similar approach, the horizontal groundwater velocity in the upper portion of the Magothy formation screened by MW-11M downgradient of the Landfill Expansion Area has been calculated to be 5.4×10^{-3} ft/day (2 ft/year) based upon a horizontal hydraulic conductivity of 1.21 ft/day derived from slug tests in MW-11M and a horizontal gradient of 1.34×10^{-3} feet of head loss per horizontal foot calculated from the 8/17/92 groundwater elevation measurements. A porosity of 30 percent (clean sand) was utilized to develop a conservative velocity even though the clay content of the formation in the screened interval of MW-11M is in excess of 10 percent. Based upon an anisotropic ratio of 35:1 for the Magothy aquifer Island-wide, the vertical hydraulic conductivity of the Magothy formation has been calculated at 3.46×10^{-2} ft/day. Using the strongest downward vertical gradient calculated at 0.006 feet of head loss per vertical foot measured on 8/17/92, the vertical groundwater velocity in the proximity of the screened interval of MW-11M is 6.9×10^{-4} ft/day or 0.25 ft/year. While the presence of a downward vertical gradient has been persistent between the Upper Glacial aquifer and the Magothy formation at this location for the four months for which data is available, fluctuation in the direction of the gradient is expected to occur during the course of the year.

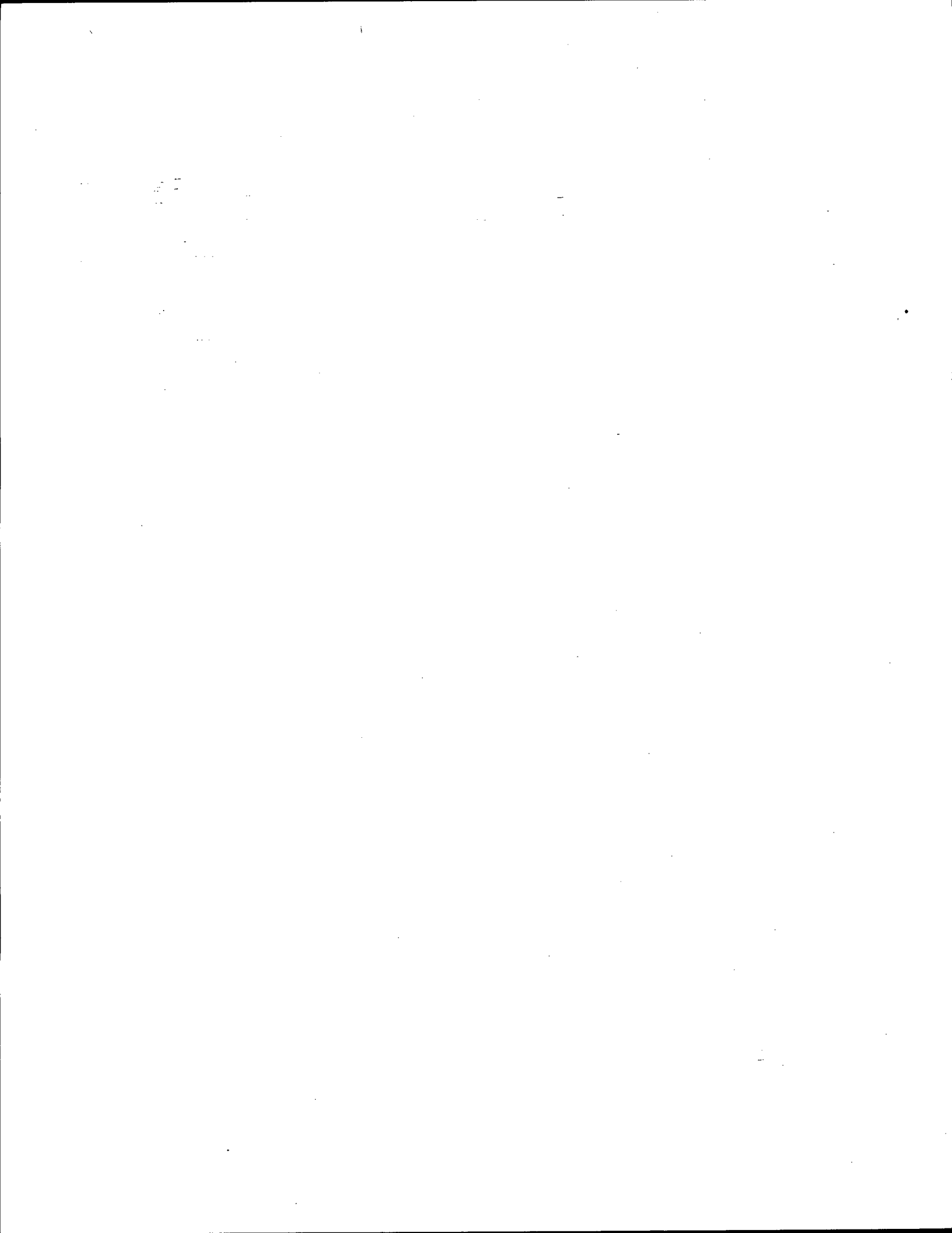
The ratio between the horizontal and vertical groundwater velocities in the Magothy formation in the proximity of Cluster 2 is 8:1, with the horizontal component of groundwater flow predominating.

Based upon data available from four months of groundwater elevation measurements at Cluster 2 located directly downgradient of the Landfill Expansion Area, the strong predominance of a horizontal component of groundwater flow over the vertical component, 50:1 in the Upper Glacial aquifer and 8:1 in the upper portion of the Magothy formation, indicates that the horizontal groundwater flow component would transport groundwater from beneath the expansion area southeasterly past the migrating line of zero recharge to the Magothy aquifer to a discharging condition before reaching the base of the Upper Glacial aquifer. The predominance of the component of horizontal flow over vertical flow

exhibited at Cluster 2 is in direct contrast to conditions in the deep flow recharge area where the downward vertical component flow predominates over horizontal groundwater flow.

Further support for the absence of deep groundwater recharge in the area of the proposed Landfill Expansion Area exists in the groundwater quality data obtained from the deep Upper Glacial aquifer well and Magothy well located 200 feet downgradient of the Existing Landfill. These data show that groundwater contamination detected in the deep Upper Glacial aquifer well has not been detected in the Magothy aquifer well at the same location. This indicates that downward migration of contaminants is not occurring at this location and is likely not to occur in the vicinity of the Landfill Expansion Area, in particular downgradient where the flow from the Magothy discharges to the Upper Glacial aquifer.

**APPENDIX 14
LEACHATE COLLECTION
AT THE LANDFILL EXPANSION AREA**



APPENDIX 14
LEACHATE COLLECTION AT THE LANDFILL EXPANSION AREA

The baseliner system proposed for the Landfill Expansion Area includes provisions for collection and removal of leachate generated during operations and after closure of the Landfill Expansion Area. In accordance with 6 NYCRR Part 360-2.7(c)(5), the baseliner design provides for both primary and secondary collection and removal of leachate. All collected leachate will be pumped from either the primary or secondary leachate collection and removal system (LCRS) using pumping systems located in the low point of each phase. These pumping systems will be housed within HDPE side riser/sump units and equipped with automatic on/off controls. Leachate will be transmitted via dual contained gravity pipeline to a pump station and then to the on-site leachate storage facility.

The on-site storage facility is a 965,000-gallon tank. It is anticipated that the tank and associated truck loading and piping facilities will be built during the 1993 construction season. The storage facility will consist of a steel tank with glass fused lining set within a steel containment structure. Level controls and interlock systems have been included in the design to shut off leachate pumps in the event that the levels within the tank approach its rated capacity.

The factors affecting leachate generation, the approach taken to estimate the quantity of leachate generated over the course of the Landfill Expansion Area's operational life and throughout closure, and the design of the leachate collection and removal system are discussed below.

The leachate collection system has been designed to prevent a release of leachate to the environment under the most severe rainfall conditions, as well as to maintain less than one foot of head on the liner under worst case operating conditions.

In order to quantify the amount of leachate to be handled, a water budget analysis has been performed to estimate the leachate generation rates at the Landfill Expansion Area. The analysis was performed using the Hydrological Evaluation of Landfill Performance (HELP) computer program. The results of the analysis are summarized in Table A14-1. The leachate generation anticipated as a function of the Landfill Expansion Area development is included in Table A14-2.

Table A 14-1
TOWN OF BROOKHAVEN LANDFILL EXPANSION
LEACHATE GENERATION ESTIMATE
SUMMARY OF HELP MODEL RESULTS

Case Analysed	Leachate Generation				Remarks
	Peak Daily Flow (ga./ac.)	Peak Average Monthly Flow (gal./ac.)	Average Annual Flow (gal./ac.)	Peak Daily Head (In.)	
Active Phase (Daily Cover)	1,750	50,640	511,680	11.6	One Year Average (74) Waste Thickness = 10 ft
Final Grade (Intermediate Cover)	1,030	21,680	178,260	7.8	Two Year Average (74+75) Waste Thickness = 84 ft

Table A 14-2
TOWN OF BROOKHAVEN LANDFILL EXPANSION
LEACHATE GENERATION BASED ON SITE DEVELOPMENT

Operational Sequence	Active ¹ Phase Area (AC)	Final ² Grade Area (AC)	Closure Area (AC)		Post-Closure ⁵ Area (AC)	Cell 5 Peak Monthly Flow (gal)	Existing L.F. ⁶ Peak Monthly Flow (gal)	Total Peak Monthly Flow to Storage Tank (gal)
			Type I ³	Type II ⁴				
Phase I	8.0	0.0	0.0	0.0	0.0	405,120	750,000	1,155,120
Phase II	5.4	10.6	2.6	0.0	0.0	539,664	384,000	923,664
Phase III	5.5	10.7	5.4	2.6	0.0	594,988	113,000	707,988
Phase IV	5.6	10.8	5.5	5.4	2.6	614,756	51,000	665,756
Phase V	5.8	10.9	5.5	5.5	8.1	630,694	51,000	681,694
Phase VI	5.9	11.0	5.0	5.5	13.6	634,226	51,000	685,226
Phase VII	6.0	11.1	4.4	5.0	18.6	634,348	51,000	685,348
Phase VIII	6.1	12.8	4.0	4.4	23	671,256	51,000	722,256
Phase IX	5.9	14.6	4.0	4.0	27	701,184	51,000	752,184
Closure	0.0	15.5	5.0	4.0	31	438,320	51,000	489,320
Post-Closure								
1-year	0.0	0.0	15.5	5.0	30	255,100	51,000	306,100
3-years	0.0	0.0	0.0	15.5	40	77,010	51,000	128,010
5-years	0.0	0.0	0.0	0.0	55.5	33,300	51,000	84,300

Notes

- ¹ Leachate generation is based on HELP Model Peak Monthly Flow of 52,640 gal/ac.
- ² Leachate generation is based on HELP Model Peak Monthly Flow of 21,680 gal/ac.
- ³ Peak monthly leachate generation after one year of closure (14,000 gal/ac/mo).
- ⁴ Peak monthly leachate generation after three years of closure (3,420 gal/ac/mo).
- ⁵ Leachate generation is estimated at 20 gal/ac/day which is the maximum allowable leakage rate for final cover (5 years after closure).
- ⁶ Leachate generation was estimated based on the proposed closure sequence of the existing landfill.

The HELP model uses climatological and soil information specific to the site, as well as landfill design data to produce estimates of water movement into and within the Landfill Expansion Area. Using the climatological data, the HELP model uses the Soil Conservation Service (SCS) Runoff Curve Number method to compute the runoff. Surface slope is accounted for by a manual selection of Curve Number. The program uses Darcy's Law to model percolation and vertical water movements, and the linearized Boussinesq equation to compute lateral drainage.

The analysis for the Landfill Expansion Area was performed using the climatological data included within the model for New York City. The site-specific information included a baseliner slope of two percent with leachate collection laterals spaced at 115 feet on center, and a drainage layer permeability of 1×10^{-2} cm/sec. One type of waste was considered in the analysis. "Ash" and "residue" were modeled using default data for MSW. This should represent a conservative analysis since the ERF Ash is expected to be less permeable and hold less water in its voids.

Based on the above assumptions, the following two conditions were analyzed:

ACTIVE PHASE

This condition represents areas which are undergoing further filling operations and have no intermediate cover. The HELP model simulation was performed using the following assumptions:

- Soil cover of 6 inches above the waste to represent placement of daily cover.
- Applying a potential runoff fraction of 0.05 percent to model conservatively filling operations below grade.
- No leakage through the primary liner.
- Waste thickness of 20 feet. This represents the worst condition since filling activities are below grade where there is no potential for runoff and minimal capability for storage.
- Length of run is one year since filling operations below grade are not expected to last for longer than a year.

All other input data, such as initial parameters of all layers, are selected based on HELP model default data. Detailed presentation of all input data is included in the HELP model computer output summary for each run, which is contained in the Engineering Report of the Part 360 Solid Waste Management Facility Permit Application.

The results of the computer model run estimate a peak daily flow of 1,850 gallons per acre (gal/acre) from the primary collection system. Average daily flow was estimated to be 850 gal/acre. The results of the simulation are summarized on Table A15-1.

FINISHED GRADE

The HELP simulation for this condition was performed similar to that for the initial operation with the following changes:

- A 12-inch layer of soil was added above the waste to represent placement of intermediate cover.
- Runoff was estimated at 9 percent by applying a potential runoff fraction of 1.
- The landfill cell contains 84 feet of waste which is half the thickness of the expected maximum waste height.
- Length of run is two years since final cover will be placed within this period.

The results, as summarized in Table A15-2, indicate that peak daily leachate flow from the primary collection system upon placement of intermediate cover reduces to 850 gal/acre, with an average daily flow estimated to be 330 gal/acre.

The HELP model was not utilized to simulate leachate generation under closure and post-closure conditions due to the uncertainty of applying initial parameters for the waste. However, based on in-house and published data, the operational leachate generation rate is expected to drop below the maximum allowable leakage rate (USEPA) of 20 gal/acre/day after six years. Based on this assumption, an average monthly leachate generation rate of 4,175 gal/acre was used for the closure scenario. This number was estimated based on 25 percent of the monthly leachate generation for the "finish grade" condition. However, the monthly leachate generation rate for post-closure was assumed to be 600 gal/acre/month based on the maximum allowable leakage rate of 20 gal/acre/day.

Table A15-2 shows leachate generation based on Landfill Expansion Area development. The different areas for each operational phase were obtained from the Engineering Design Plans. Maximum monthly leachate generation of 758,350 gal/month will be expected during the filling of the first cell of the Landfill Expansion Area. This is a very conservative analysis since it is unlikely that the entire cell base area will be operational at once. The base grading of each cell is designed so every cell can be subdivided during initial filling operations and leachate will be generated in smaller areas instead of in the entire cell area. Further, maximum monthly leachate generation will decrease to 23,880 gal/month after closure of the Landfill Expansion Area.

Actual leachate generation will vary in response to field conditions, actual rainfall, climate, cover application, and stormwater collection.

In addition to the normal operational conditions, the Landfill Expansion Area has been designed to contain, within the lined area, a considerable amount of rainfall. Operational berms will allow for the temporary buildup of 5 feet of liquid prior to overtopping. This represents the capacity to retain a 7.2 inch rainfall event. Such an event corresponds approximately to a 24-hour storm with a 100-year recurrence interval.

MAINTENANCE/CLEAN-OUT/REPAIR

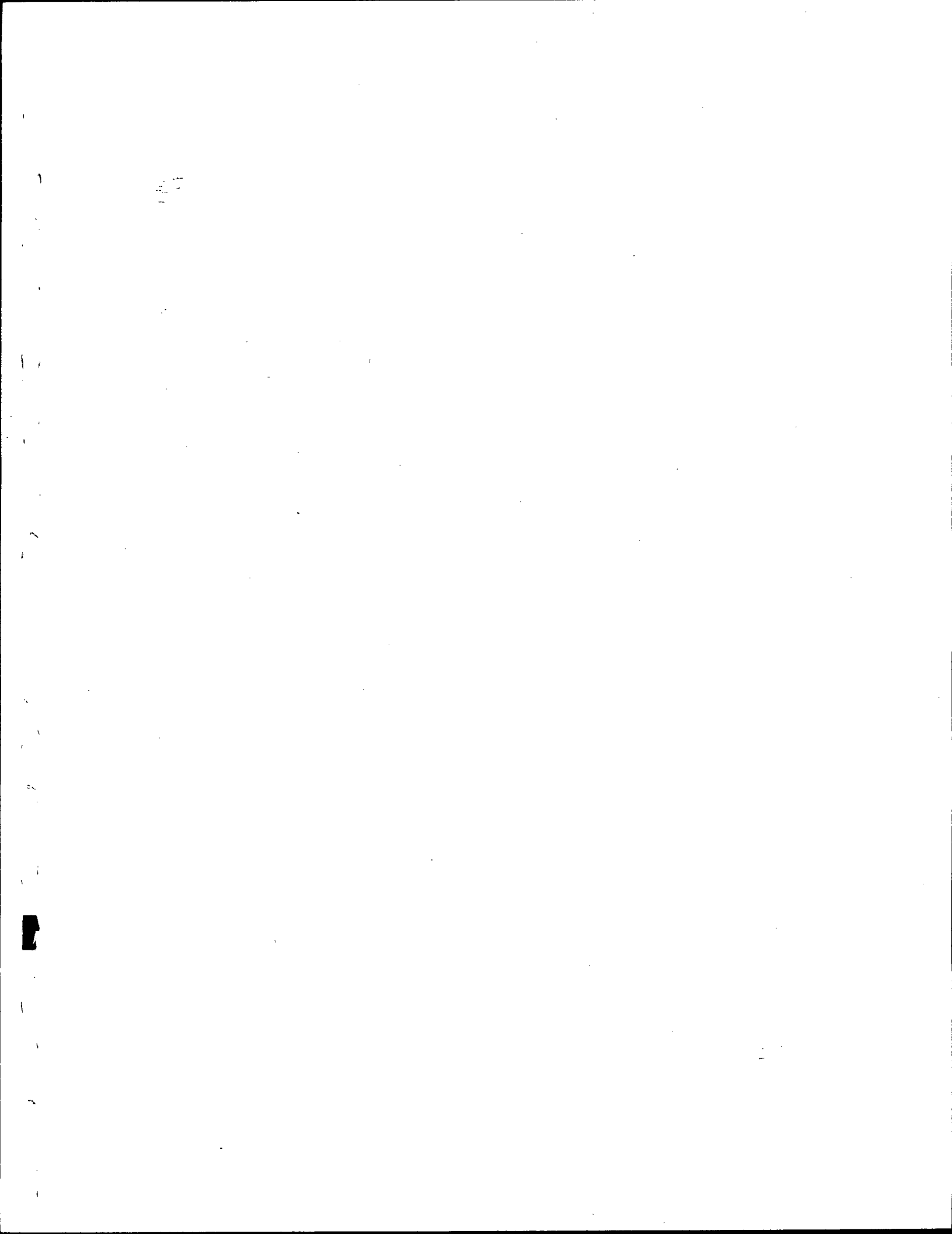
The leachate collection piping will be designed to operate under the loads that are associated with the materials to be landfilled. The pipes that will be used are slotted PVC pipes with a substantial wall thickness. These types of pipes, as well as the engineering methods of design have been shown to perform as anticipated for many types of installations, including a large number of landfills. Therefore, no crushing of pipes is expected.

If a leachate collection pipe should collapse, it will still remain intact, that is unbroken, due to the flexible nature of the pipe. The pipe could be re-opened using a vibrating bullet-shaped probe especially designed for this type of work. Access to the pipe line is provided from channels of both ends of the all collection piping.

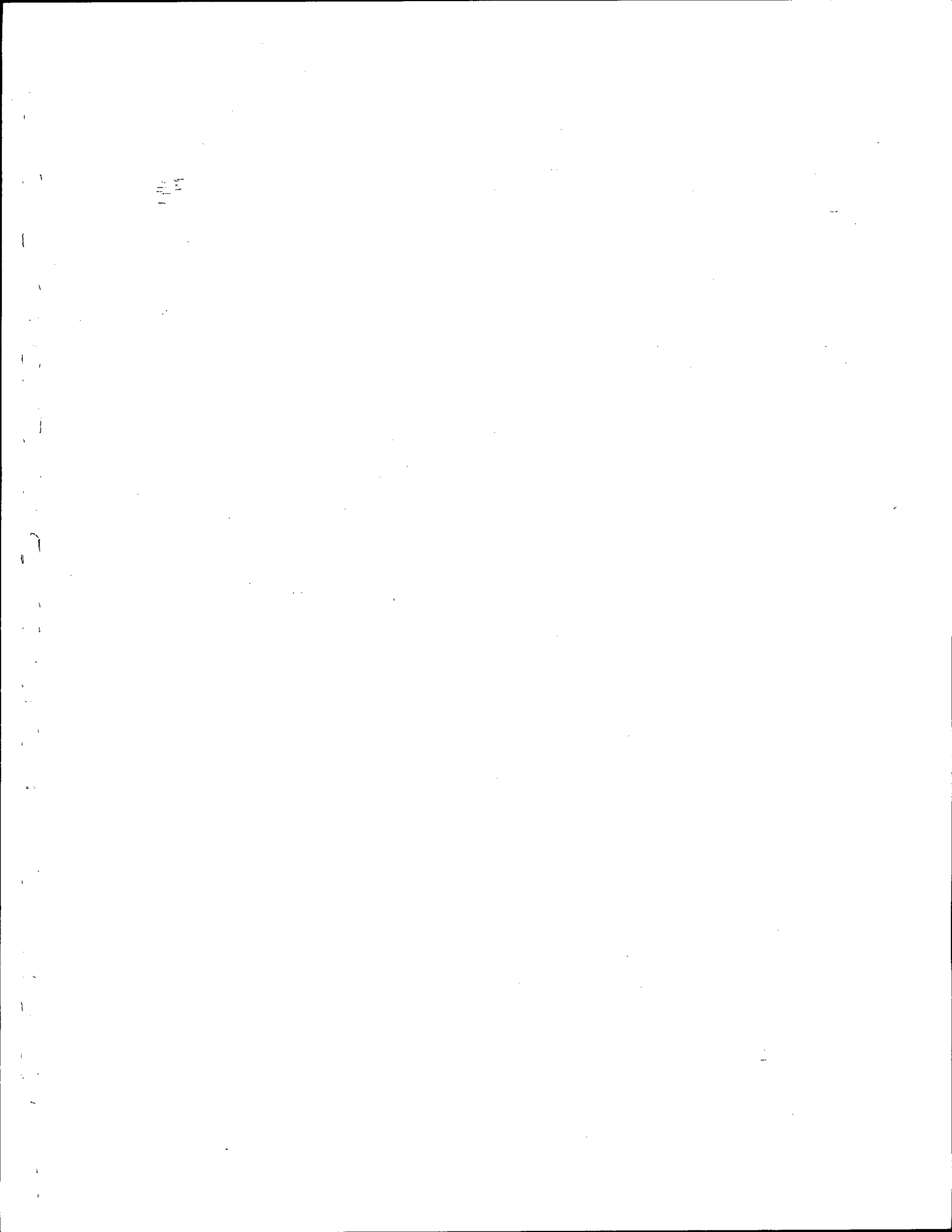
These cleanouts are also installed for the purpose of allowing the collection piping to be cleaned periodically to prevent clogging from occurring. Cleaning is performed with hydraulic jets, pipe cleaning pigs, or mechanical wips with flushing. The design proposed for Landfill Expansion has been used successfully at a large number of facilities.

Leachate Storage and Removal

Leachate will be removed daily from the storage tank, using the truck loading facility. The amount of leachate removed will vary depending on the generation rate, but is likely to average less than 30,000 gallons per day. A determination as to the rate of removal from the tank will depend on the level within the tank and the time of year. The leachate management goal will be to maintain at least 15 days of freeboard within the tank.

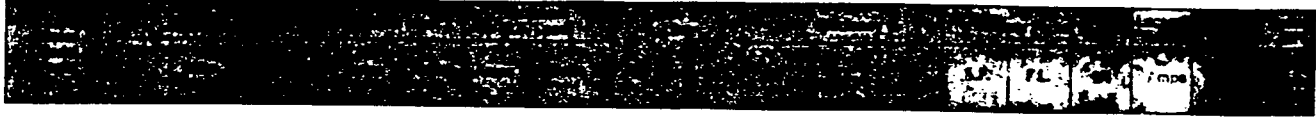


**APPENDIX 15
LEACHATE PUMP SPECIFICATIONS**



Application Three Phase Motors

Table 12 Three Phase Motor Specifications (60 Hertz)

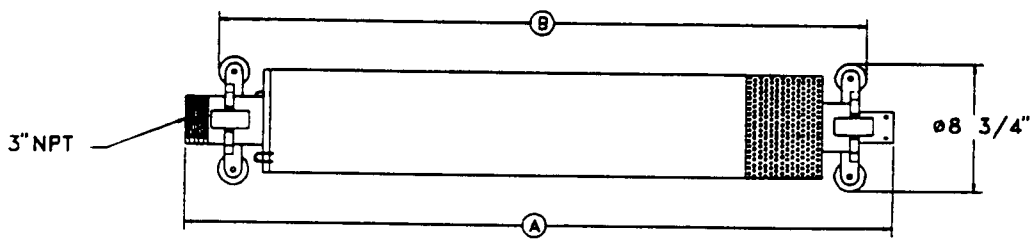
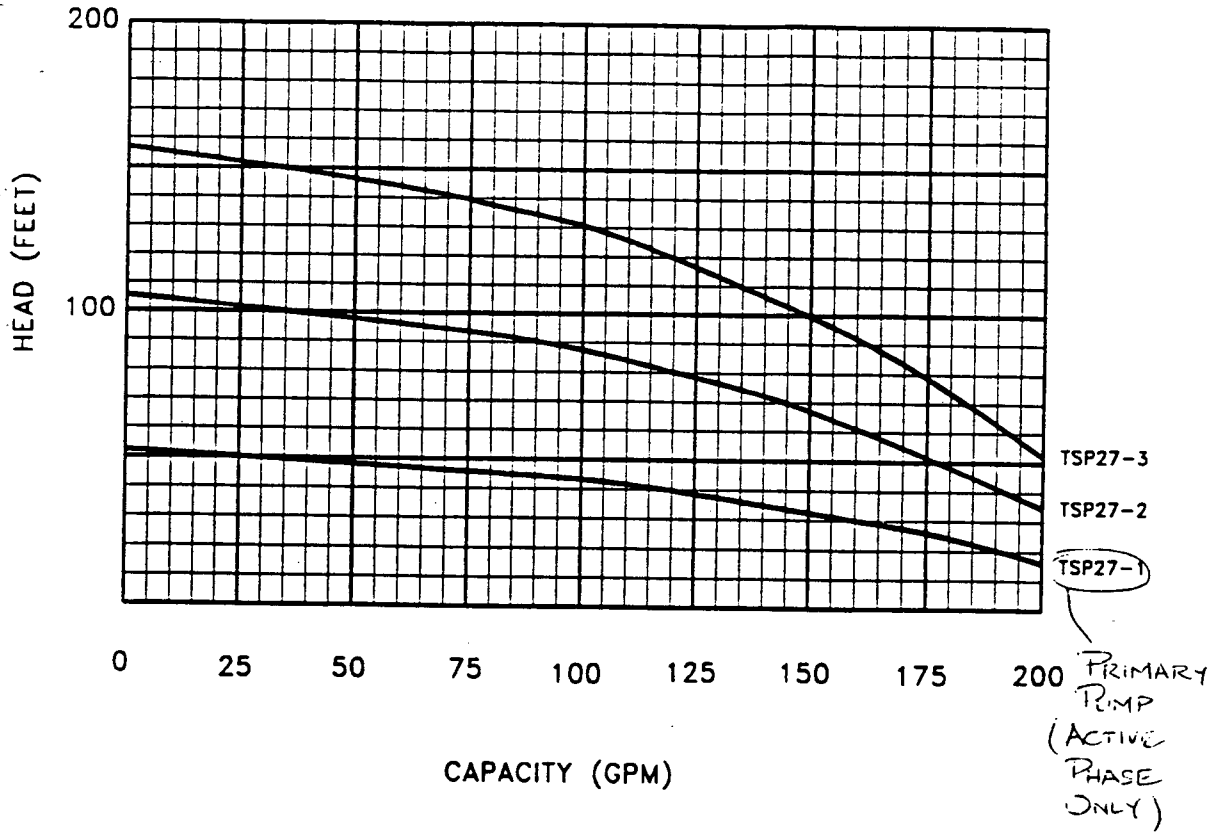


4 inch

2345014	200	60	1.6	2.8	635	3.7	900	6.64-7.3	66.4	59.4	53.3	76.6	64.1	56.5	17.3	N	10	5	
2345114	230	60	1.6	2.3	635	2.9	900	9.5-10.4	66.4	59.4	53.3	76.6	64.1	56.5	15.0	N	8	4	
2345213	460	60	1.6	1.2	635	1.6	900	38.4-41.6	66.4	59.4	53.3	76.6	64.1	56.5	7.5	N	4	2	
2345024	200	60	1.5	3.7	920	4.7	1250	4.66-5.12	67.5	63.0	57.7	79.5	69.0	66.0	24.6	N	12	6	
2345124	230	60	1.5	3.3	920	4.1	1250	7.24-7.84	67.5	63.0	57.7	79.5	69.0	66.0	21.4	N	11	5	
2345223	460	60	1.5	1.6	920	2.0	1250	27.8-30.2	67.5	63.0	57.7	79.5	69.0	66.0	10.7	N	5	3	
2345031	200	60	1.4	4.5	1140	5.7	1520	4.1-4.5	69.3	67.0	63.0	79.1	71.0	63.4	31.0	M	14	6	
2345131	230	60	1.4	3.9	1140	4.8	1520	5.2-5.6	69.3	67.0	63.0	79.1	71.0	63.4	27.0	M	12	6	
2345231	460	60	1.4	2.0	1140	2.4	1520	21.2-23.0	69.3	67.0	63.0	79.1	71.0	63.4	13.5	M	6	3	
2345041	200	60	1.3	6.1	1570	7.3	2000	2.4-3.4	75.0	74.0	70.9	80.0	73.0	64.5	39	K	20	9	
2345141	230	60	1.3	5.2	1570	6.3	2000	3.2-4.1	75.0	74.0	70.9	80.0	73.0	64.5	34	K	20	8	
2345241	460	60	1.3	2.6	1570	3.1	2000	11.3-15.0	75.0	74.0	70.9	80.0	73.0	64.5	17	K	15	4	
2345341	575	60	1.3	2.1	1570	2.5	2000	17.6-23.4	75.0	74.0	70.9	80.0	73.0	64.5	14	K	15	3	
2343047	200	60	1.3	6.1	1570	7.4	2050	2.4-3.4	75.0	74.0	70.9	80.0	73.0	64.5	39	K	20	9	
2343147	230	60	1.3	5.3	1570	6.4	2050	3.2-4.1	75.0	74.0	70.9	80.0	73.0	64.5	34	K	20	8	
2343247	460	60	1.3	2.7	1570	3.2	2050	11.3-15.0	75.0	74.0	70.9	80.0	73.0	64.5	17	K	15	4	
2343347	575	60	1.3	2.2	1570	2.6	2050	17.6-23.4	75.0	74.0	70.9	80.0	73.0	64.5	14	K	15	3	
2343051	200	60	1.25	7.7	2050	9.3	2580	1.9-2.4	69.5	69.5	67.4	84.4	79.0	71.2	53	L	25	10	
2343151	230	60	1.25	6.7	2050	8.1	2580	2.4-3.0	69.5	69.5	67.4	84.4	79.0	71.2	46	L	20	10	
2343251	460	60	1.25	3.4	2050	4.1	2580	9.7-12.0	69.5	69.5	67.4	84.4	79.0	71.2	23	L	15	5	
2343057	200	60	1.25	7.7	2150	9.3	2690	1.9-2.4	69.5	69.5	67.4	84.4	79.0	71.2	53	L	25	10	
2343157	230	60	1.25	6.7	2150	8.1	2690	2.4-3.0	69.5	69.5	67.4	84.4	79.0	71.2	46	L	20	10	
2343257	460	60	1.25	3.4	2150	4.1	2690	9.7-12.0	69.5	69.5	67.4	84.4	79.0	71.2	23	L	15	5	
2343357	575	60	1.25	2.7	2150	3.2	2690	15.1-18.7	69.5	69.5	67.4	84.4	79.0	71.2	18	L	15	4	
2343067	200	60	1.15	10.9	2980	12.5	3420	1.3-1.7	75.5	75.2	73.2	81.5	77.8	69.5	70	K	35	14	
2343167	230	60	1.15	9.5	2980	10.9	3420	1.8-2.2	75.5	75.2	73.2	81.5	77.8	69.5	61	K	30	15	
2343267	460	60	1.15	4.8	2980	5.5	3420	7.0-8.7	75.5	75.2	73.2	81.5	77.8	69.5	31	K	15	7	
2343367	575	60	1.15	3.8	2980	4.4	3420	10.9-13.6	75.5	75.2	73.2	81.5	77.8	69.5	24	K	15	6	
2343077	200	60	1.15	18.3	5050	20.5	5810	.70-.94	74.0	74.0	72.2	84.0	81.0	73.0	120	K	50	24	
2343177	230	60	1.15	15.9	5050	17.8	5810	.93-1.2	74.0	74.0	72.2	84.0	81.0	73.0	104	K	45	20	
2343277	460	60	1.15	8.0	5050	8.9	5810	3.6-4.4	74.0	74.0	72.2	84.0	81.0	73.0	52	K	25	10	
2343377	575	60	1.15	6.4	5050	7.1	5810	5.6-6.9	74.0	74.0	72.2	84.0	81.0	73.0	42	K	20	8	
2343087	200	60	1.15	26.5	7360	30.5	8450	.46-.57	76.2	76.0	74.0	83.2	80.0	72.2	188	K	80	35	
2343187	230	60	1.15	23.0	7360	26.4	8450	.61-.75	76.2	76.0	74.0	83.2	80.0	72.2	164	K	70	30	
2343287	460	60	1.15	11.5	7360	13.2	8450	2.4-3.4	76.2	76.0	74.0	83.2	80.0	72.2	82	K	35	15	
2343387	575	60	1.15	9.2	7360	10.6	8450	3.5-5.1	76.2	76.0	74.0	83.2	80.0	72.2	65	K	30	12	
2343297	10	460	60	1.15	17.0	10100	18.8	11700	1.8-2.3	75.2	74.5	72.0	79.2	75.5	67.1	116	K	50	20
2343397	10	575	60	1.15	13.6	10100	15.0	11700	2.8-3.5	75.2	74.5	72.0	79.2	75.5	67.1	93	K	40	20

6 inch

2366506	5	200	60	1.15	17.5	4700	19.1	5400	.68-.84	79.5	79.1	77.2	82.0	79.5	73.8	98.9	H	50	24
2366006	5	230	60	1.15	15.0	4700	16.6	5400	.88-1.09	79.5	79.1	77.2	82.0	79.5	73.8	86	H	45	20
2366106	5	460	60	1.15	7.5	4700	8.3	5400	3.53-4.37	79.5	79.1	77.2	82.0	79.5	73.8	43	H	25	10
2366206	5	575	60	1.15	6.0	4700	6.4	5400	5.93-7.16	79.5	79.1	77.2	82.0	79.5	73.8	34.4	H	20	8
2366516	7 1/2	200	60	1.15	25.1	7000	28.3	8000	.39-.48	79.8	80.0	78.7	83.0	80.5	73.8	149.5	H	70	30
2366016	7 1/2	230	60	1.15	21.8	7000	24.6	8000	.57-.71	79.8	80.0	78.7	83.0	80.5	73.8	130	H	70	30
2366116	7 1/2	460	60	1.15	10.9	7000	12.3	8000	2.17-2.68	79.8	80.0	78.7	83.0	80.5	73.8	65.0	H	30	15
2366216	7 1/2	575	60	1.15	8.7	7000	9.8	8000	3.65-4.41	79.8	80.0	78.7	83.0	80.5	73.8	52	H	25	12



PUMP MODEL	SINGLE PHASE			THREE PHASE			SHIPPING WEIGHT (LBS)	
	MOTOR HP	A (in)	B (in)	MOTOR HP	A (in)	B (in)	1Ø	3Ø
TSP27-1	2.0	45.75	42.75	2.0	44.25	41.25	87.0	82.0
TSP27-2	5.0	63.50	60.50	5.0	57.50	54.50	140.2	120.5
TSP27-3	5.0	67.00	64.00	5.0	61.00	58.00	147.5	127.7

SEE 0579-2 FOR HIGH HEAD MODELS.

THE SUREPUMP™ LEACHATE REMOVAL SYSTEM FROM EPG COMPANIES

A Sure Way To Control Costs

The SurePump™ Leachate Removal System is a sure way to control your costs because it maintains the lowest possible leachate levels of any system.

Due to its advanced technology, SurePump can extract leachate from the lowest levels of your landfill. Easier to handle, install, operate, and maintain, SurePump maximizes your landfill efficiency and productivity, minimizing the chance of costly system breakdowns and repairs.

A Sure Way To Control Risks

By maintaining the liquid head at the lowest possible level, SurePump not only minimizes your leachate levels but also helps assure compliance with environmental protection guidelines and minimizes the threat of membrane rupture and groundwater contamination from too much leachate buildup. By maintaining low leachate levels, you also lessen the chances for obstructing gas venting operations.

Why SurePump Outperforms The Rest

Feature for feature, SurePump is easier and more economical to install, operate and maintain than any other leachate pumping system.

• SurePump, which rolls on wheels, is smaller, lighter, and more streamlined than any other pump. That's why it can reach and extract leachate from much lower levels than larger, bulkier pumps.

• Constructed of stainless steel and Teflon*, our submersible pumps last longer and perform better under the most adverse conditions.

• SurePump also utilizes a new pressure transducer sensor which is more rugged, corrosion resistant, better constructed and more accurate than other level-detecting devices.

EPG Controls Maximize Your SurePump Performance

EPG offers a variety of pump controls to use with SurePump, from the basic PumpMaster™ controller to the Telmax™ II computer-based controller.

A computer-based site control system that operates by remote control, Telmax II can automatically monitor and maintain all conditions and operations of your leachate removal system and process system at your landfill.

Like an on-site field operator, Telmax II will continuously monitor, record, and keep you informed via telephone of vital data on all your leachate removal operations, including leachate levels, pump operations, flow rates, leachate chemistry, cycling operations, and alarm conditions.

Telmax II and SurePump give you maximum site control.

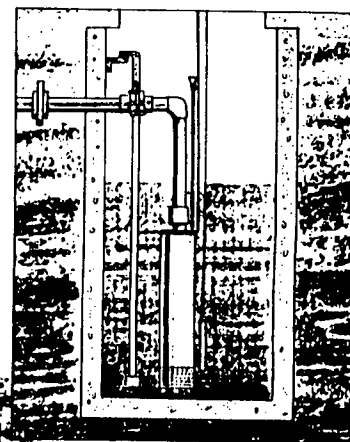
SurePump.

Sure Control of Costs. Sure Control of Risks.

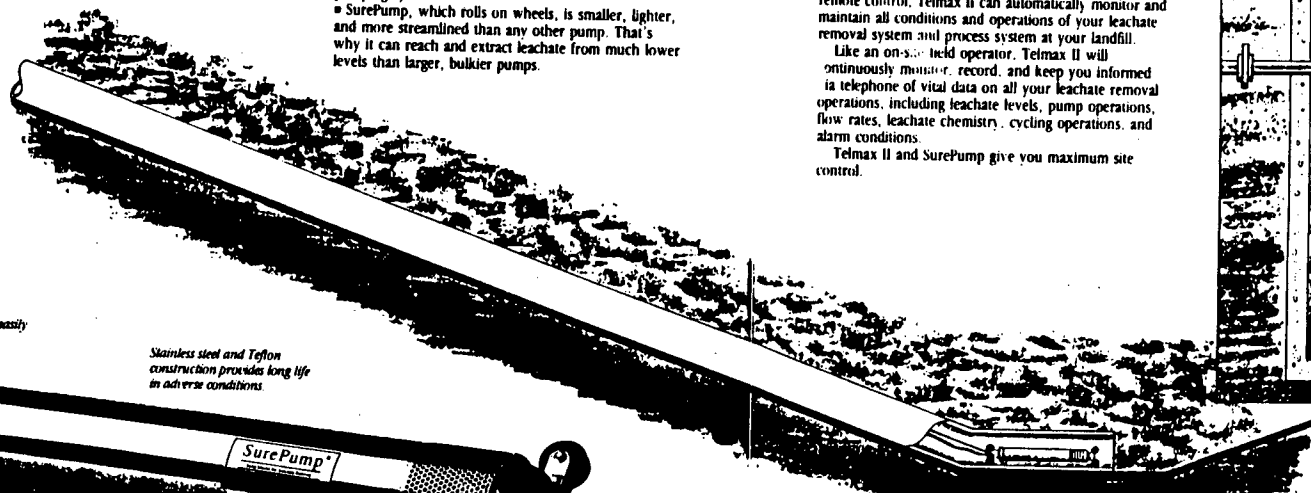
Streamlined design, rugged construction and superior level sensing combine to make SurePump the most effective leachate removal system available.

Call our toll-free number, 1-800-443-7426, for more information on SurePump, Telmax II, or other EPG products for groundwater monitoring and remediation.

*Teflon is a Reg. TM of DuPont Corp.



The SurePump provides superior performance in both side slope riser and vertical rump applications. Both models are available in a wide range of flow rates, discharge heads and motor voltages.



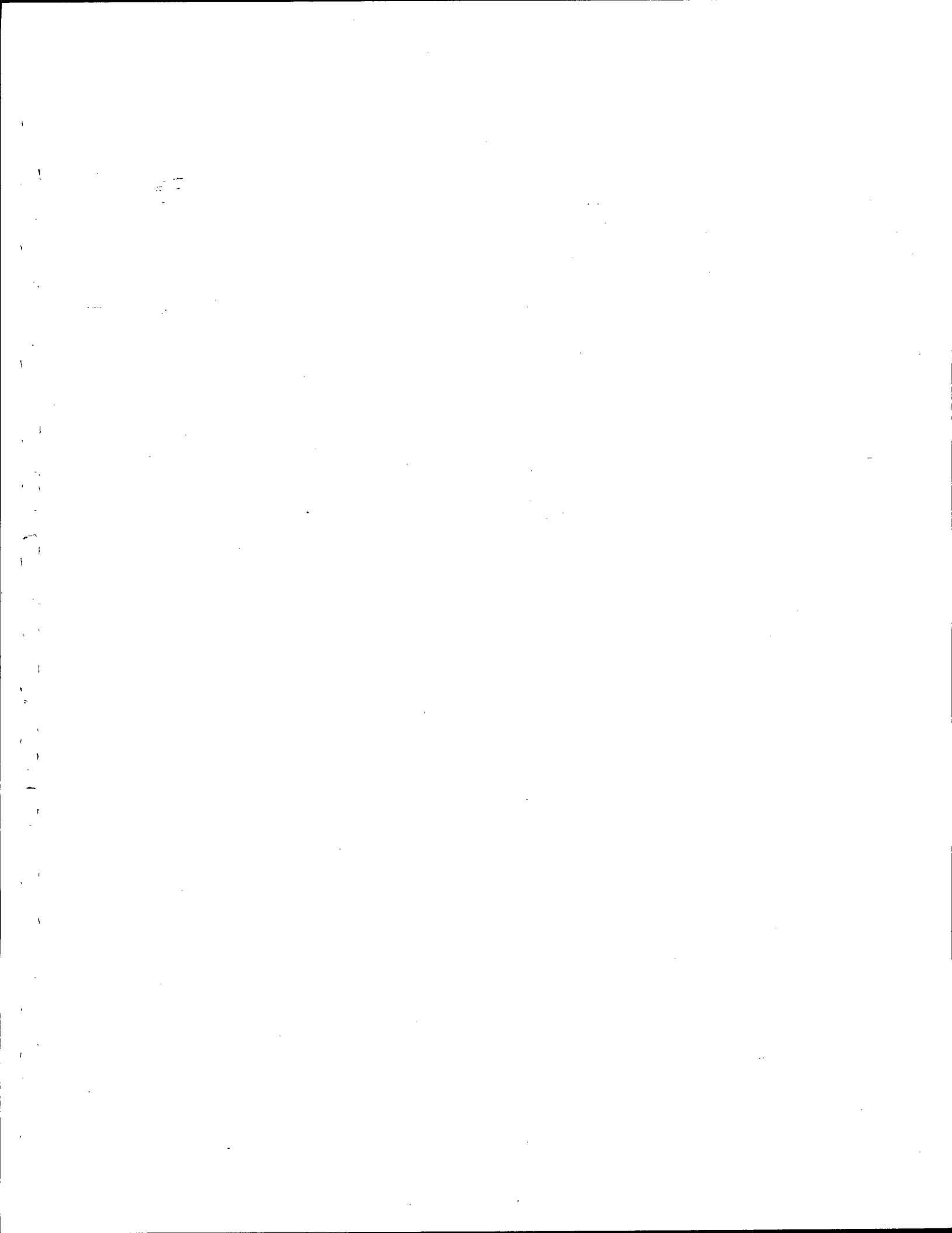
Wheeled sump drainer rolls easily up and down side slope.

Stainless steel and Teflon construction provides long life in adverse conditions.

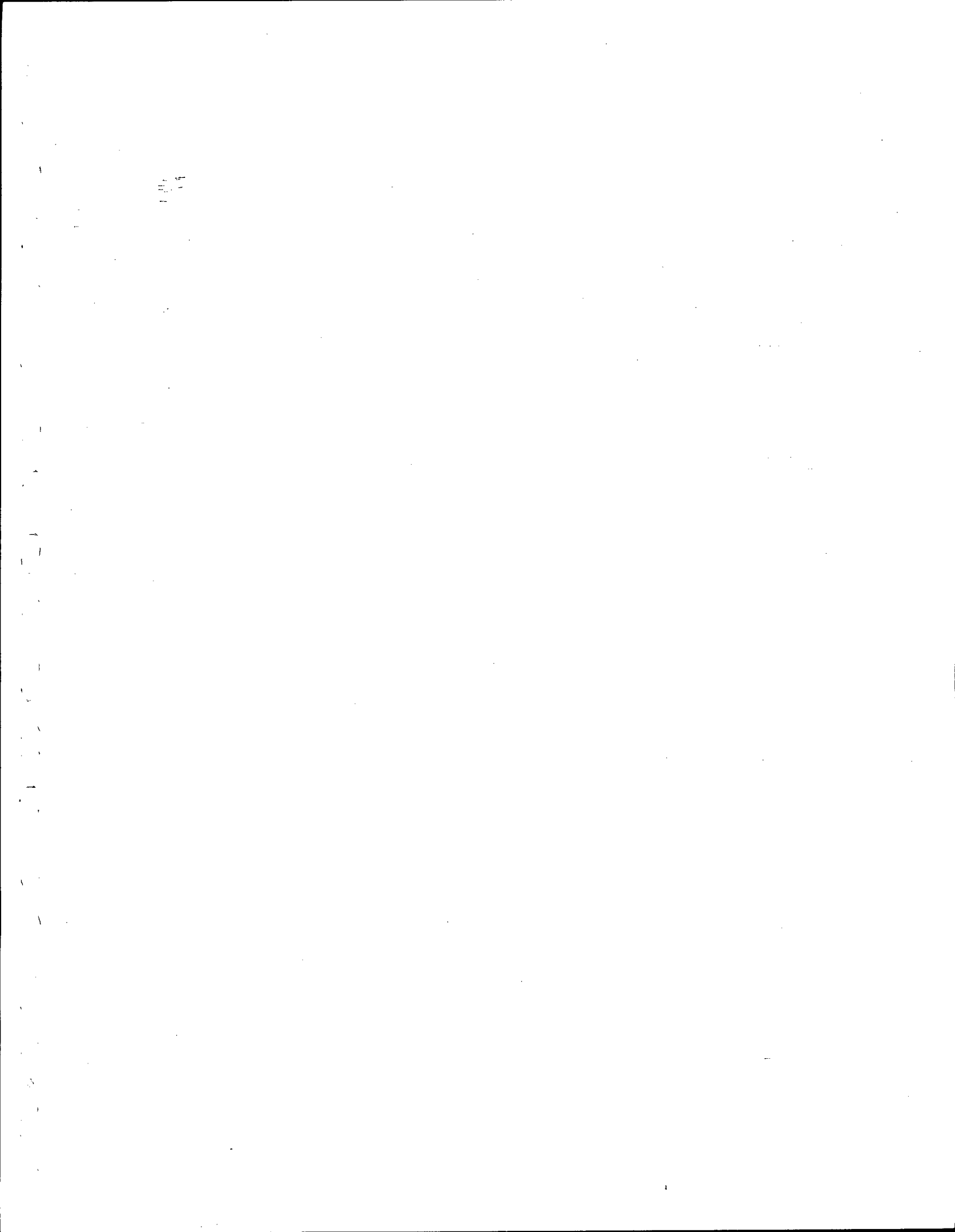
The SurePump pressure transducer sensor provides more accurate, reliable level detection and level control.

The SurePump™ Wheeled Sump Drainer is protected by U.S. patent #4966534.

PROTECTED BY U.S. PATENT
4,966,534 AND # 4,962,030



APPENDIX 16
SEPTEMBER 18, 1992 MEMORANDUM FROM USEPA ADMINISTRATOR,
WILLIAM K. REILLY, TO ALL REGIONAL ADMINISTRATORS



**TEXT**

**EPA MEMORANDUM TO REGIONAL ADMINISTRATORS ON EXEMPTION
FOR MUNICIPAL WASTE COMBUSTION ASH
UNDER RCRA SEC. 3001(I) HAZARDOUS WASTE REGULATION
(TEXT)**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 18 1992

THE ADMINISTRATOR

MEMORANDUM

TO: All Regional Administrators

SUBJECT: Exemption for Municipal Waste Combustion Ash From
Hazardous Waste Regulation Under RCRA Section 3001(1)

PURPOSE

This memorandum sets forth the United States Environmental Protection Agency's ("EPA" or "Agency") decision under section 3001(1) of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6921(1), to treat ash generated from the combustion of nonhazardous municipal solid waste at resource recovery facilities (hereinafter "MWC ash") as exempt from hazardous waste regulation under RCRA Subtitle C. EPA believes that MWC ash can be regulated in a manner that will be protective of human health and the environment under RCRA Subtitle D. The determination set

As part of the Hazardous and Solid Waste Amendments of 1984, Congress amended RCRA by adding section 3001(1), which provides, in pertinent part:

(1) Clarification of household waste exclusion

A resource recovery facility recovering energy from the mass burning of municipal solid waste shall not be deemed to be treating, storing, disposing of, or otherwise managing hazardous waste for purposes of regulation under (Subtitle C) if . . . such facility . . . receives and burns only . . . household waste . . . and solid waste from commercial or industrial sources that does not contain hazardous waste

RCRA section 3001(1)(1), 42 U.S.C. § 6921(1)(1). Section 3001(1) is codified in EPA's regulations as part of the household waste exclusion. 40 C.F.R. 261.4(b)(1).

forth herein supersedes the Agency's earlier view of section 3001(1) as not exempting MMC ash from hazardous waste regulation. See 50 Fed. Reg. 28701, 28725-26 (1985).

ANALYSIS

TEXT OF THE RULES

EPA's determination that MMC ash is exempt from hazardous waste regulation is consistent with the text of section 3001(1). As proclaimed by the title of section 3001(i) -- "Clarification of household waste exclusion" -- in enacting that provision, Congress was building upon the regulatory framework it earlier had established. In enacting RCRA in 1976, Congress indicated that solid waste from households, which frequently includes materials that may contain hazardous constituents, should not be regulated as hazardous waste under Subtitle C. S. Rep. No. 94-988, 94th Cong., 1d Sess. 16 (1976). EPA codified Congress' intent in the so-called "household waste exclusion," promulgated in 1980, which provides that "any material . . . derived from households . . . is not hazardous waste . . ." 40 C.F.R. 261.6(b)(1).

In the preamble to the Federal Register notice announcing the household waste exclusion, EPA clearly stated that the exclusion extends to ash remaining after household waste is incinerated: "Since household waste is excluded in all phases of its management, residues after treatment (e.g., incineration, thermal treatment) are not subject to regulation as hazardous waste." 45 Fed. Reg. 33066, 33098 (1980). The Agency justified its determination that ash derived from the incineration of household waste is subject to the exclusion on the ground that Congress intended to "exclude basic streams generated by consumers at the household level." *Id.* (emphasis added).

In enacting section 3001(1), Congress arguably extended the regulatory exclusion for ash derived from the incineration of household waste to similar residues generated by resource recovery facilities from the incineration of household waste and nonhazardous commercial and industrial solid waste. To the extent that household waste alone is incinerated, section 3001(1) coincides with EPA's earlier interpretation of the household waste exclusion as exempting ash derived from such waste from hazardous waste regulation. The inclusion in section 3001(1) of nonhazardous commercial and industrial waste, along with household waste, suggests that Congress may have intended that MMC ash resulting from the combustion of these combined wastes also should not be subject to regulation as a hazardous waste.

In addition, congressional intent to exempt MMC ash from hazardous waste regulation is suggested by the portion of section 3001(1) which provides that a resource recovery facility shall not be deemed to be "treating, storing, disposing of, or otherwise managing" hazardous waste. (Emphasis added.) Nothing ordinarily is "disposed of" when a resource recovery facility receives or stores a nonhazardous solid waste, and the burning of such waste generally is regarded as a type of treatment under RCRA. See RCRA sections 1004(3) and (34), 42 U.S.C. § 6903(3) and (34) (definitions of "disposal" and "treatment"). As a

result, since MWC ash ordinarily is the only waste "disposed of" by such a facility, Congress arguably intended that MWC ash not be regarded as a hazardous waste.

For the foregoing reasons, EPA believes that the text of section 3001(i) is consistent with the Agency's determination that MWC ash is exempt from hazardous waste regulation.

Legislative History

EPA's determination that MWC ash is exempt from hazardous waste regulation also is consistent with the legislative history of section 3001(i). First, a Report of the Senate Committee on Environment and Public Works addressing section 3001(i) specifically states that "[a]ll waste management activities of such a [resource recovery] facility, including the generation, transportation, treatment, storage and disposal of waste shall be covered by the exclusion." S. Rep. No. 98-284, 98th Cong., 1st Sess. 61 (1983) (emphasis added).¹ Since MWC ash ordinarily is the only waste "generated" by a resource recovery facility, Congress arguably demonstrated its intent that MWC ash not be regarded as a hazardous waste.

Second, the Senate Report states that section 3001(i) was enacted to "encourage commercially viable resource recovery facilities and . . . remove impediments that may hinder their development and operation." S. Rep. No. 98-284, 98th Cong., 1st Sess. 61 (1983). As noted above, one of the significant features of section 3001(i) is that it applies to resource recovery facilities that burn both household waste and nonhazardous commercial and industrial waste. If section 3001(i) were interpreted as not exempting MWC ash derived from the incineration of combined household waste and nonhazardous commercial and industrial waste from regulation as hazardous waste, the policy goal stated in the Senate Report could be substantially frustrated. As a practical matter, the cost benefit to a resource recovery facility in being able to burn both household and nonhazardous commercial and industrial waste

¹ Unlike the legislative history for section 3001(i), the statute does not expressly state that the "generation" of waste by a resource recovery facility is included within the exemption. At most, the absence of that term reflects that Congress did not expressly address the precise issue of whether MWC ash should be exempt from hazardous waste regulation, and does not indicate that Congress intended that MWC ash be regulated as a hazardous waste. In such a circumstance, the Agency has discretion to adopt a reasonable interpretation that best serves the goals embodied in section 3001(i). EPA has exercised that discretion in adopting the interpretation set forth herein, as discussed more fully below.

² The Senate Report is entitled to special weight because the Conference Committee adopted, without change, the Senate version of section 3001(i). H.R. Rep. No. 98-1133, 98th Cong., 2d Sess. 106 (1984), reprinted in 1984 U.S. Code Cong. & Admin. News 5677. In passing the Senate version of section 3001(i), Congress also impliedly adopted the Senate's interpretation of that provision set forth in the Senate Report.

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TEXT

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would be significantly reduced if MWC ash must be disposed of as a hazardous waste, as discussed more fully below.

Third, the Senate Report refers to the wastes being incinerated in resource recovery facilities as "waste streams," as follows:

Resource recovery facilities often take in "household wastes" mixed with other non-hazardous wastes stemming from a variety of sources other than "households." . . . New section 3001(i) clarifies the original intent to include within the household waste exclusion activities of a resource recovery facility which recovers energy from the mass burning of household waste and non-hazardous waste from other sources.

Id. (emphasis added). As noted above, the Agency justified its determination that ash derived from the incineration of household waste is excluded from hazardous waste regulation on the ground that Congress intended to "exclude waste streams generated by consumers at the household level." 45 Fed. Reg. 33066, 33098 (1980) (emphasis added). In also using the term "waste stream" in the Senate Report, Congress arguably demonstrated its intent that section 3001(i) be construed as extending the household "waste stream" exclusion to the entire "waste stream" at a resource recovery facility, including MWC ash derived from the burning of combined household and nonhazardous commercial and industrial waste.

In sum, the legislative history of section 3001(i) is consistent with the Agency's determination to exempt MWC ash from hazardous waste regulation.

Policy Considerations

As discussed above, EPA believes that the text and legislative history of section 3001(i) are consistent with the Agency's view that MWC ash is exempt from hazardous waste regulation. Since Congress did not in the statute or legislative history expressly address the precise issue of whether MWC ash should be exempt from hazardous waste regulation, the Agency has discretion to adopt a reasonable interpretation that best serves the goals embodied in section 3001(i). EPA has exercised that discretion in adopting the interpretation set forth herein. EPA believes that the two statutory goals embodied in section 3001(i) -- protecting the environment and promoting resource recovery from nonhazardous solid waste -- are best served by exempting MWC ash from hazardous waste regulation.

EPA has determined that MWC ash can be regulated in a manner that will be protective of human health and the environment under subtitle D. In particular, EPA recently promulgated new criteria for municipal solid waste landfills at 40 C.F.R. Part 258, 56 Fed. Reg. 50978 (1991). Municipal landfills and monofills receiving MWC ash must comply with those criteria. The Part

In the preamble to the Federal Register notice announcing the final Part 258 criteria, EPA stated that "[t]he

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258 criteria impose requirements on municipal landfills that far exceed those previously imposed, including more stringent location restrictions, facility design and operating criteria, ground-water monitoring requirements, corrective action requirements, financial assurance requirements, and closure and post-closure care requirements. The Agency believes the disposal of MWC ash in municipal landfills subject to the Part 258 criteria will be protective of human health and the environment.

If information comes to EPA's attention suggesting that MWC ash is being managed or disposed of in a manner that is not protective of human health and the environment under subtitle D, the Agency will consider additional actions, including providing technical assistance, issuing guidance documents, and, if appropriate, promulgating additional regulations to address those situations. In addition, at individual sites, if the disposal of MWC ash may present an imminent and substantial endangerment to human health or the environment, EPA may require responsible persons to undertake appropriate action under section 7003(a) of RCRA, 42 U.S.C. § 4973(a).

Resource recovery from municipal solid waste is an important component of EPA's integrated waste management approach, which involves the complementary use of a variety of practices to safely and effectively manage municipal solid waste.⁴ Such activity advances the statutory objective of RCRA (the Resource Conservation and Recovery Act) to reduce the volume of waste that requires disposal. See *id.* at section 1002(b)(8), 42 U.S.C. § 4902(b)(8). It also advances the statutory objective of

purpose of part 258 is to establish minimum national criteria for municipal solid waste landfills, including [such landfills] used for . . . disposal of nonhazardous municipal waste combustion (MWC) ash (whether the ash is co-disposed or disposed of in an ash monofill).⁵ See also response to comment documents nos. 155, 168, 171, 172, and 199 in the public record for the Part 258 rulemaking (docket number F-91-CMLF-FFFFF).

³ The promulgation of the Part 258 criteria is an important step in ensuring that MWC ash can and will be regulated in a manner that will be protective of human health and the environment under subtitle D. The promulgation of these criteria also has served as an impetus for the Agency's reevaluation of its earlier view of section 1001(i) as not exempting MWC ash from hazardous waste regulation. 50 Fed. Reg. 28702, 28725-26 (1985).

⁴ That approach establishes a hierarchy that prefers source reduction (i.e., the design, manufacture, purchase, or use of materials to reduce the amount or toxicity of solid waste generated) and recycling (i.e., the process by which materials are collected and used as raw materials for new products) over solid waste combustion (including combustion for resource recovery) and landfilling. Solid waste combustion, however, has played and will continue to play an important role in the Agency's integrated waste management approach because the entire solid waste stream cannot be reduced through source reduction and recycling. EPA encourages communities to choose the mix of solid waste options that are most appropriate for them, considering local economic, environmental, and other factors.

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TEXT

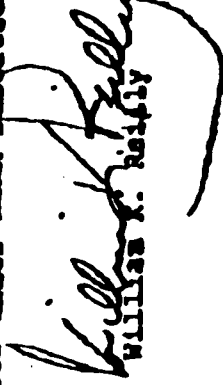
DEN: 9-22-82

recovering significant amounts of energy from solid waste. See Id. at sections 1002(d)(2), 42 U.S.C. § 6901(d)(2), and 1003(a)(11), 42 U.S.C. § 6902(a)(11). For those reasons, EPA agrees with Congress' view, set forth in the Senate Report discussed above, that impediments hindering the development and operation of commercially viable resource recovery facilities should be eliminated where practicable.

For nonhazardous municipal solid waste that can be disposed of either in a Subtitle D landfill or combusted in a resource recovery facility, the comparative economic desirability of those two alternatives significantly is impacted by the application of section 1001(i) to MWC ash. If MWC ash is not exempt under 1001(i) from hazardous waste regulation, a strong economic incentive may exist to dispose of raw municipal solid waste in Subtitle D landfills, rather than combust that waste in resource recovery facilities. The costs associated with the disposal of MWC ash in Subtitle C facilities are dramatically higher than in Subtitle D landfills. Although costs vary significantly from region to region, when averaged on a national basis there is over a ten-fold difference between the cost of disposal of MWC ash in a Subtitle C facility compared to a Subtitle D landfill: the cost of transporting and disposing of MWC ash in a Subtitle C facility is approximately \$451.00 per ton; the cost of doing so in a Subtitle D landfill is approximately \$42.00 per ton. For states that combust substantial portions of their solid waste (in resource recovery and other combustion facilities), such as Connecticut (68%), Massachusetts (47%), and Maine (45%), this cost differential could be enormous.

CONCLUSION

In sum, exempting MWC ash from hazardous waste regulation is consistent with the text and legislative history of section 1001(i), and best serves the statutory goals embodied in that provision of protecting the environment and promoting resource recovery from nonhazardous solid waste. For the foregoing reasons, EPA has determined that MWC ash is exempt from regulation as a hazardous waste under RCRA subtitle C.


William K. Reilly

cc: Don E. Clay, Assistant Administrator
Office of Solid Waste and Emergency Response (OS-100)

Herbert M. Tate, Assistant Administrator
Office of Enforcement (LE-133)

Raymond B. Ludwigszewski, Acting General Counsel (LE-130)

In addition to cost, Subtitle D landfill capacity limitations also may be a significant factor in determining whether municipal solid waste is combusted in resource recovery facilities.

End of Text



INTEGRATED
WASTE SERVICES
ASSOCIATION

ASH

NEWS RELEASE

FOR IMMEDIATE RELEASE
September 22, 1992

CONTACT:
Kent Burton (202) 467-6240

IWSA HAILS EPA'S CONFIRMATION THAT MWC ASH IS NOT A HAZARDOUS WASTE

Washington, D.C. - The Integrated Waste Services Association (IWSA) today praised the U.S. Environmental Agency's (EPA) determination that ash generated from municipal waste combustion (MWC -- also called waste-to-energy) is not to be regulated as a hazardous waste and can be safely managed under the Resource Conservation and Recovery Act (RCRA) Subtitle D regulations.

"This determination is a major breakthrough for solid waste managers in communities nationwide," commented Kent Burton, IWSA President. "It confirms what the scientific evidence has revealed for the past decade--namely that MWC ash is not hazardous and can be safely managed in MSW landfills."

"MWC ash is exempt from regulation as a hazardous waste under RCRA Subtitle C," stated William K. Reilly, EPA Administrator, in a September 18, 1992 memorandum to EPA regional administrators. He said, the "two statutory goals embodied in (RCRA) section 3001(i) -- protecting the environment and promoting resource recovery from nonhazardous solid waste -- are best served by exempting MWC ash from hazardous waste regulation."

The determination reiterated the agency's support for MWC as an important component in integrated waste management because "the entire solid waste stream cannot be reduced through source reduction and recycling." The agency further noted that MWC, which "safely and effectively manages MSW," specifically advances two key RCRA objectives--reducing the volume of waste that must be disposed of, and recovering significant amounts of energy from MSW.

"By recognizing the safety of MWC and the necessity of this option for communities nationwide," the IWSA President noted, "EPA has provided a vital element that has been missing in its MSW policies."

(Over)

"EPA encourages communities to choose the mix of solid waste options that are most appropriate for them, considering local economic, environmental, and other factors," the agency said.

Currently there are 142 WTE facilities operating in the U.S. which recover energy and materials from MSW remaining after recycling. Waste-to-energy plants manage about 16% of the nation's MSW and produce an equivalent amount of energy to supply about 1.3 million homes. These facilities operating nationwide offset the need for more than 31 million barrels of foreign oil each year.

IWSA is a national trade association that advocates an integrated approach to solid waste management, which includes making optimal use of reduction, reuse, recycling, municipal waste combustion, and landfilling to solve the nation's garbage dilemma. For more information, please contact IWSA at (202) 467-6240. The address is Two Lafayette Centre, 1133 21st Street N.W., Suite 205, Washington, D.C. 20036.

###

APPENDIX 17
JANUARY 29, 1993 LETTER TO PETER CAREY FROM
MICHAEL T. GROBEN, ASSISTANT TOWN ATTORNEY,
TOWN OF BROOKHAVEN

100
100



Town of Brookhaven New York

MICHAEL E. WALTER
HOWARD M. BERGSON
MICHAEL I. GROBEN
GLADYS N. GENTLE
GARRETT W. SWENSON, JR.
DOMINIC J. SANTORO
RANDALL J. RATJE
JAMES M. BURKE
ANNEMARIE PRUDENTI

DEPARTMENT OF LAW
DENISE F. MOLLA, Town Attorney

VIA FAX AND REGULAR MAIL

January 29, 1993

Mr. Peter Carey, P.E.
Wehran Enviro Tech
666 E. Main Street
P.O. Box 2006
Middletown, NY 10940-0858

RE: FEIS Cell 5

Dear Mr. Carey:

This is intended as a draft response to public comments regarding the acceptance of certain property on the west side of the Brookhaven Town Landfill from the Route 347 Realty Corporation, in connection with the "Regency Oaks" development. This is intended to address comments dated 12/3/92 of the Yaphank Taxpayers & Civic Association Inc. (l{c}), the Brookhaven Citizens Solid Waste Alternatives Coalition (11/27/92) at pages 1, 2 and comments by Nanette Essel at the Draft Environmental Impact Statement Public Hearing held 11/10/92 (comments starting at page 60).

According to Town records, the Town Board resolved on 7/18/72 to authorize clustered development of a property at North Bellport, Town of Brookhaven, which said property spanned Woodside Avenue on both its north and south sides (hereinafter the "North Property" and the "South Property"). A portion of the South Property comprised that area now owned by the Town of Brookhaven to the west of its existing landfill. On May 8, 1986, the Brookhaven Town Board amended its prior resolution to permit "all remaining dwelling units" scheduled to be developed within the North and South Properties (then known as "Map of Horizon Ridge") to be located on the North Property, north side of Woodside Avenue. The stated reason was to allow the developer to dedicate an as yet undeveloped portion of the South Property to the Town of Brookhaven. A site plan application for development of the North Property was then

Mr. Peter Carey
Page 2
January 29, 1993

RE: DEIS Cell 5

filed, entitled "Map of Regency Oaks at Yaphank". On June 13, 1988, the Planning Board of the Town of Brookhaven held a public site plan hearing on the "Map of Regency Oaks"; at that time, applicant's attorney noted his clients offered to dedicate approximately 124 acres (the remaining undeveloped portion of the South Property) to the Town of Brookhaven. At that time, the then-counsel to the Planning Board noted that the parcel was to be dedicated to the Town for general municipal purposes. Although counsel did opine that "I believe it is the intention to leave it open and natural as a buffer area", it is clear that he had neither the intention nor the authority to bind the Town Board in its acceptance of the dedication and that the Town would accept the property "free and clear of any covenants" (Minutes of the Brookhaven Town Planning Board June 13, 1988 page 212). A deed for the approximately 125 acres of the remaining undeveloped portion of the South Property was then tendered to the Town of Brookhaven by the then-owner of the South Property, Rt. 347 Realty Corp. Said deed contained no restrictions or covenants as to the use of the dedicated property. On March 21, 1989, the Brookhaven Town Board formally accepted the dedication of the remaining acreage of the South property "in conjunction with the Map of Regency Oaks". The acceptance was "for general municipal purposes" and contained no restrictions of any kind regarding the use of the dedicated premises. The deed was recorded on or about April 3, 1989.

On November 13, 1989, the Planning Board granted approval of the site plan for "The Map of Regency Oaks at Yaphank". In its resolution of approval, the Planning Board referred to an overall dedication of approximately 250 acres of land "for landfill buffer areas and other parkland and recreational areas". It is clear that the Planning Board resolution did not refer to the 125 acres dedicated to the Town as "park" or "recreational" area; there is no indication that these lands were proposed to be dedicated as parkland or recreational areas. It would appear that the Planning Board was referring to the 125 acres as a "buffer" area; it is equally clear that the Planning Board was made aware at the prior site plan

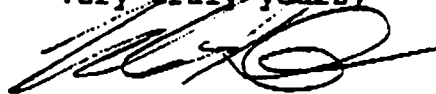
Mr. Peter Carey
Page 3
January 29, 1993

RE: DEIS Cell 5

public hearing that the 125 acres would be accepted by the Town with no covenants or restrictions as to its future use (Meeting of Brookhaven Town Planning Board June 13, 1988 page 212).

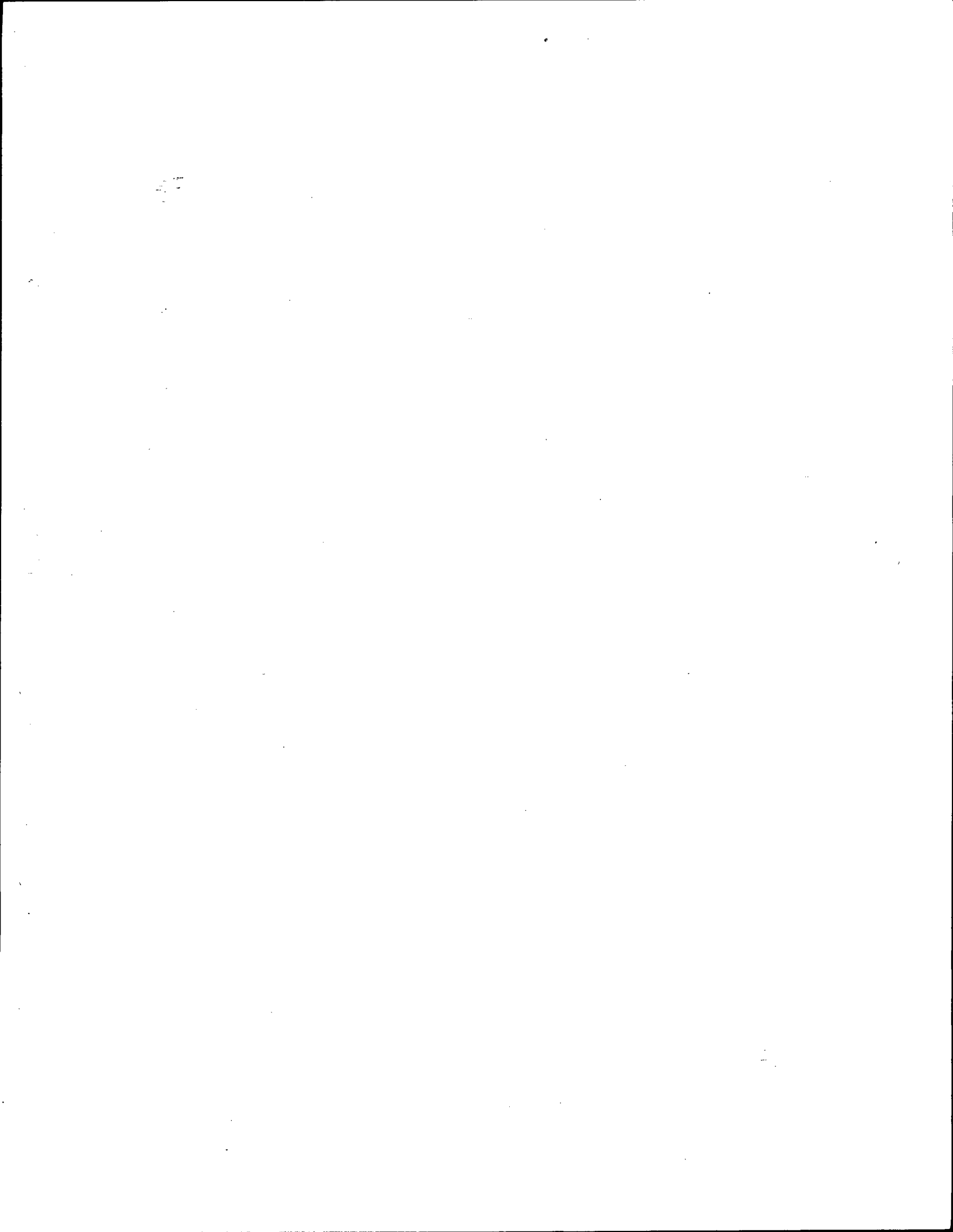
It would appear that public comments regarding the dedication of the 125 acres west of the Town landfill are confusing said property with areas dedicated as parkland or recreational areas within the Map of Regency Oaks itself. Although the Findings of the Town Planning Board are somewhat vague as to the exact nature of the prior dedication of the 125 acres to the Town of Brookhaven, it is clear that the Planning Board did not have authority to bind the Town Board, or to place restrictions on the future use of the dedicated acreage. With respect to the comment of the Brookhaven Citizens Solid Waste Alternatives Coalition (page 2) regarding a "transfer development rights (TDR) status", there is no formal dedication of development rights apparent from the proceedings before the Planning Board, or the Town Board, and thus no restrictions on future use of the property.

Very truly yours,

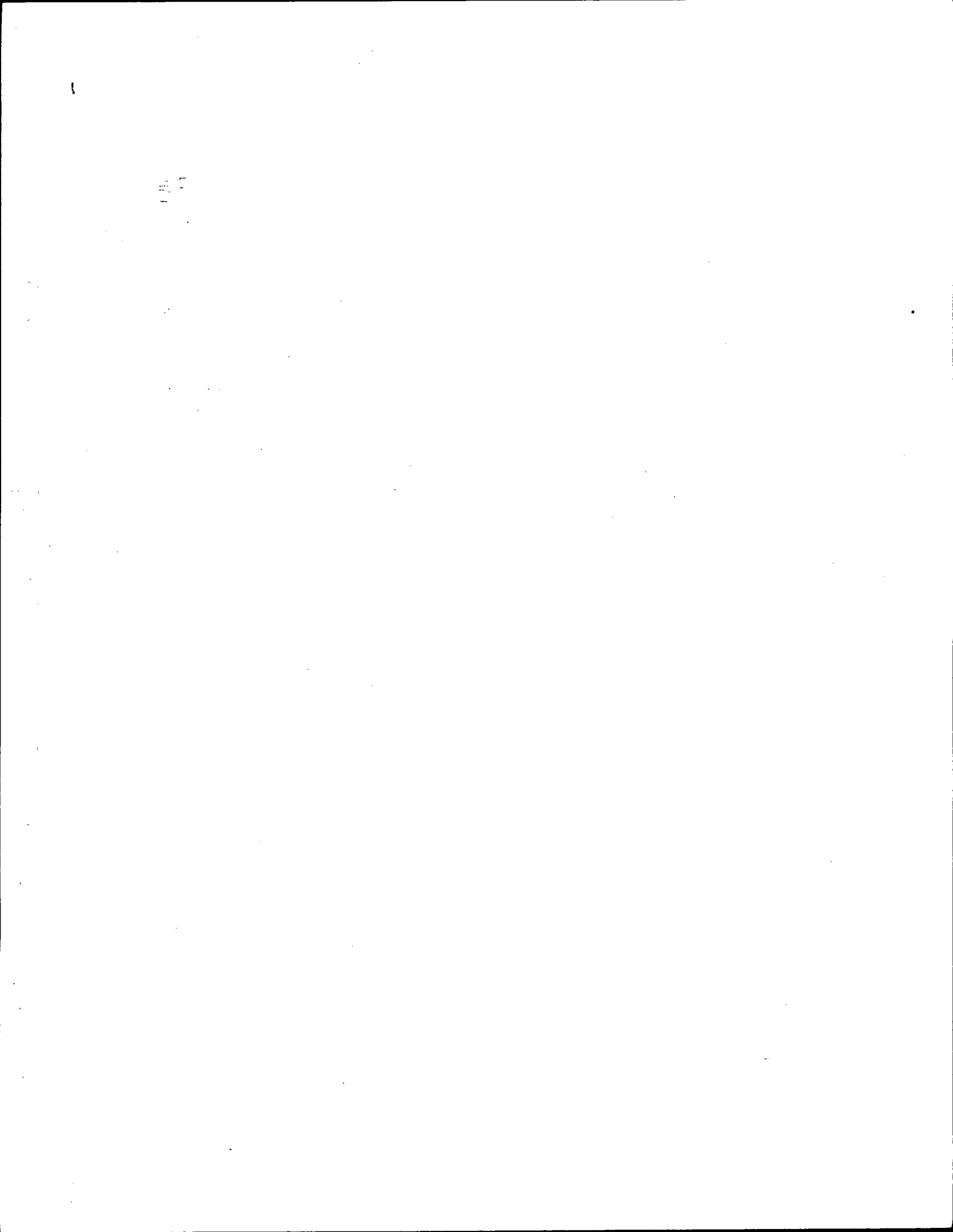


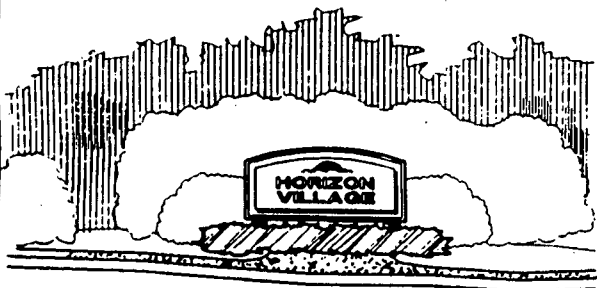
Michael T. Groben
Assistant Town Attorney

MTG:mn

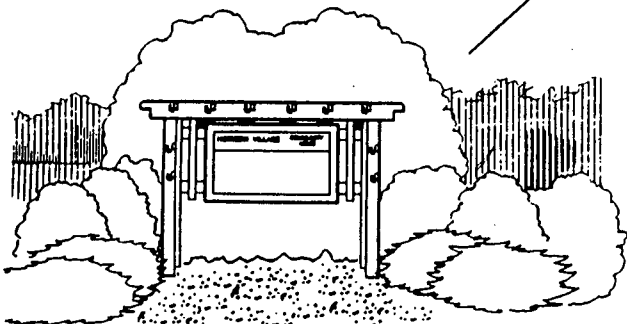


APPENDIX 18
PRELIMINARY PLANS FOR INFRASTRUCTURE IMPROVEMENTS
IN HORIZON VILLAGE





SIGNAGE AT ENTRY ON WOODSIDE AVENUE
(NOT TO SCALE)



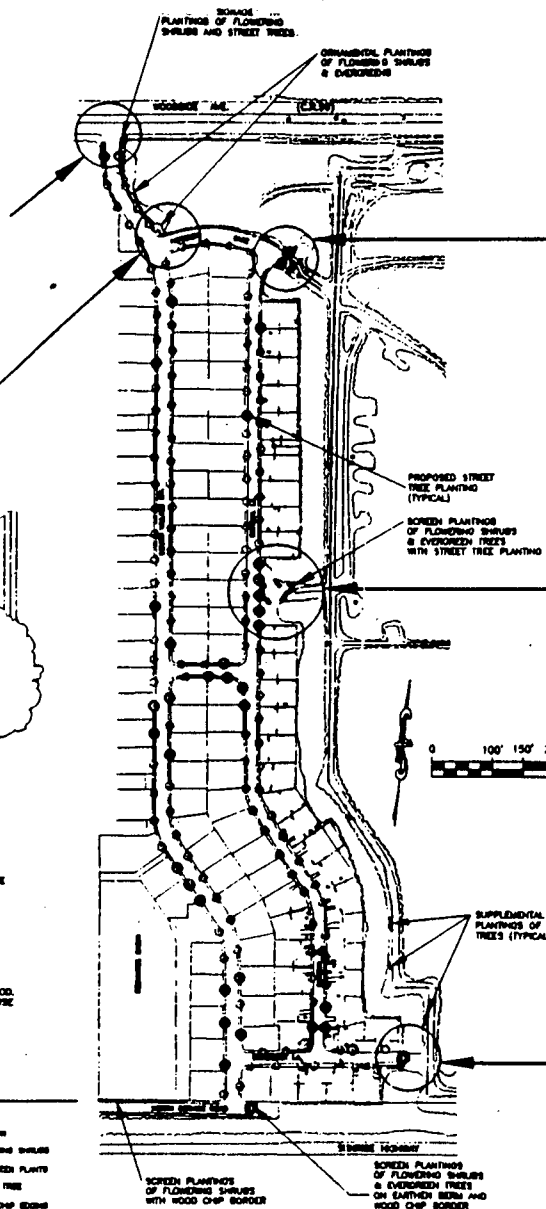
PLANTINGS AT BULLETIN BOARD
(NOT TO SCALE)

NOTES

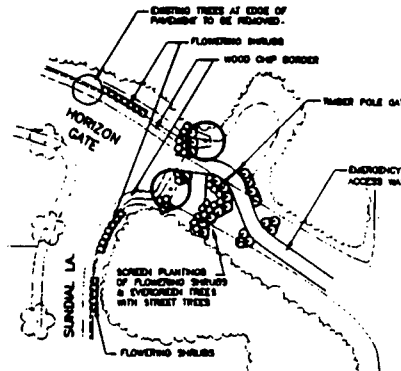
1. THE DEBRIS SHALL BE REMOVED FROM THE TOWN PROPERTY ON THE EAST SIDE OF CENTRAL SUNDIAL LANE, THE END OF HORIZON GATE, AND THE END OF SUNBURST LANE. EXISTING BIRNS SHALL BE REPOSED TO ACCOMMODATE PROPOSED PLANTINGS AND VEHICULAR ACCESS WHERE NECESSARY.
2. SIGNAGE, STREET TREES, AND PLANTINGS ARE TO BE LOCATED AS SHOWN. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD TO AVOID CONFLICTS WITH EXISTING UTILITIES AND SITE CONDITIONS.
3. A WOOD CHIP BORDER, AT A MINIMUM 8" WIDTH, SHALL EDGE THE ROADWAY AT ALL TOWN PROPERTY.
4. PROPOSED STREET TREE SHALL BE: HAWKSPUR TREE (MALE ONLY). PROPOSED FLOWERING SHRUBS SHALL BE: SCOTCH BROOM, REDTID ODOOROOD, HONEYBUZZLE, FORTYNA, GARDENY, AND BEACH ROSE. PROPOSED EVERGREEN & SCREENING PLANTS SHALL BE: NORWAY SPRUCE, JAMPER, PRIVET, AND RUSSIAN OLIVE.

LEGEND

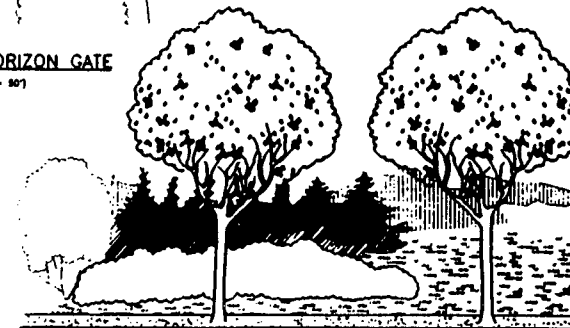
SYMBOL	DESCRIPTION
—	PROPERTY LINE
~	EXISTING VEGETATION
○	PROPOSED FLOWERING SHRUBS
●	PROPOSED EVERGREEN PLANTS
⊙	PROPOSED STREET TREE
⊖	PROPOSED WOOD CHIP BORDERS



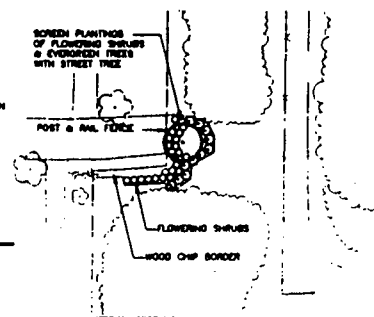
PLAN VIEW
(SCALE: 1" = 300')



PLAN VIEW AT HORIZON GATE
(SCALE: 1" = 50')



SCREEN PLANTINGS ON SUNDIAL LANE
(NOT TO SCALE)

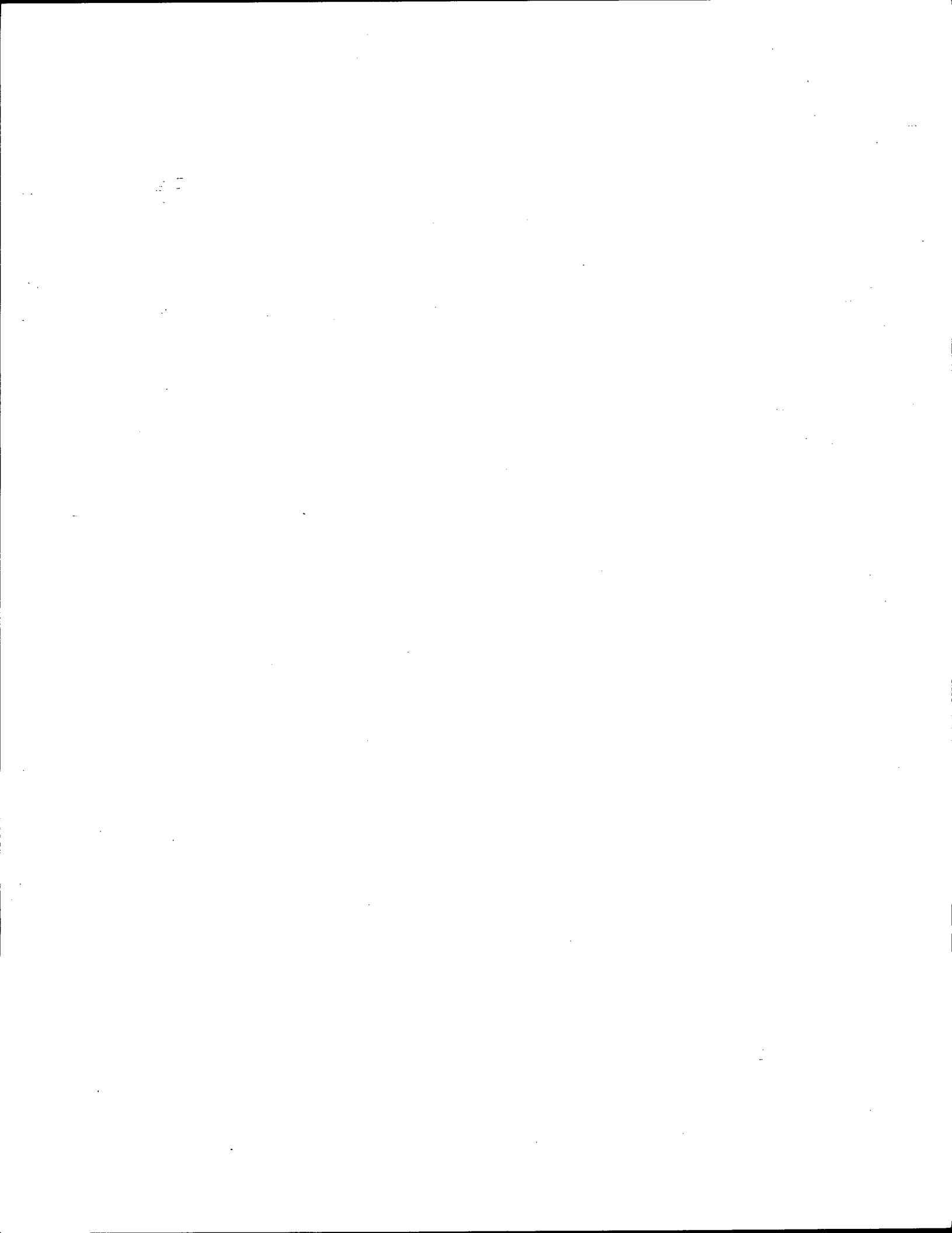


PLAN VIEW AT END OF SUNBURST LANE
(SCALE: 1" = 50')

COMMUNITY PLANTINGS FOR HORIZON VILLAGE
NORTH BELLPORT
SUFFOLK COUNTY, NEW YORK

SCALE: AS SHOWN
NOVEMBER 23, 1988
REV. 10/17/1983

LOUIS K. McLEAN ASSOCIATES, P.C.
GENERAL ENGINEERS
147 26 COUNTY ROAD
GREENWICH, NEW YORK

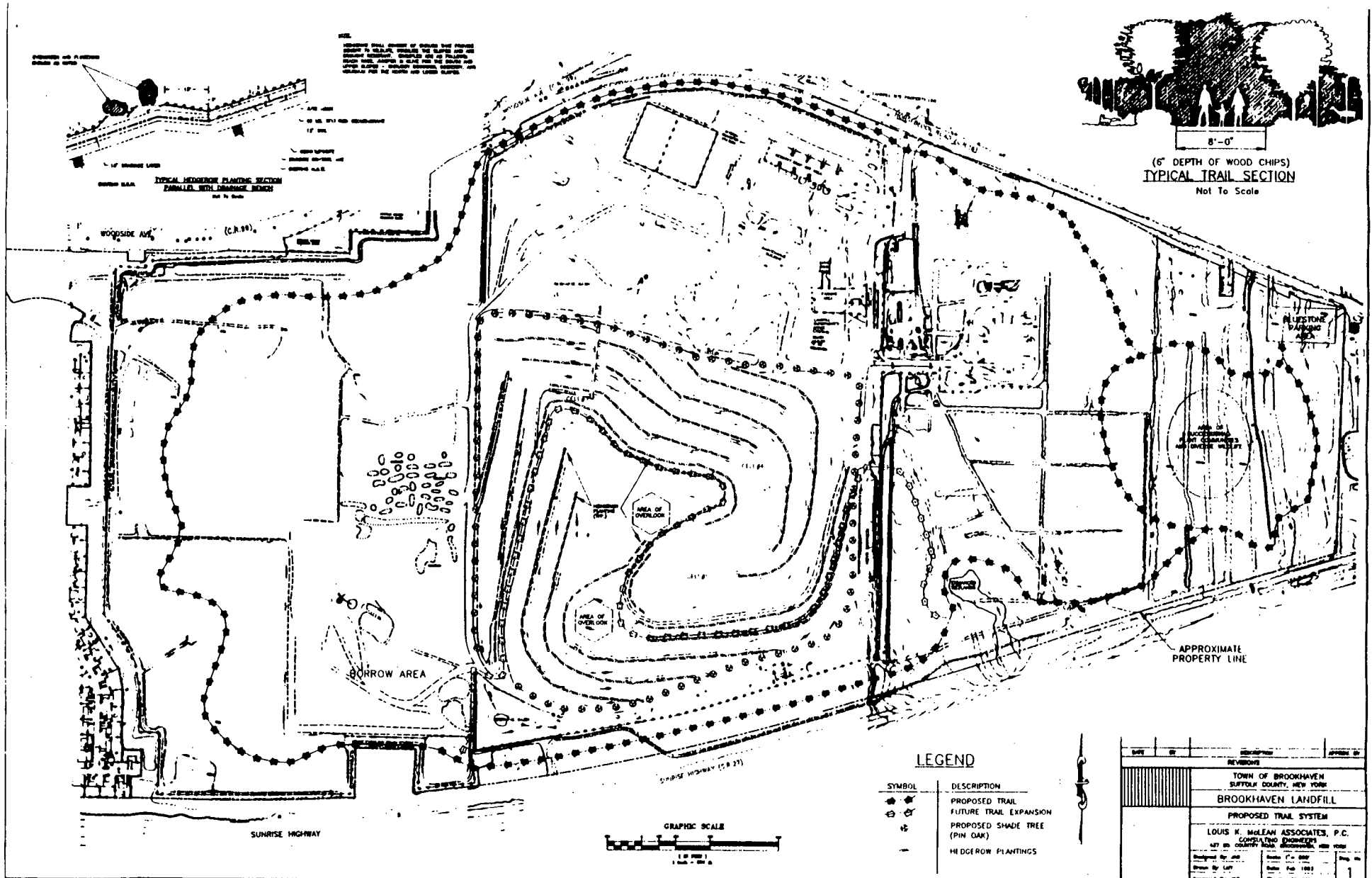
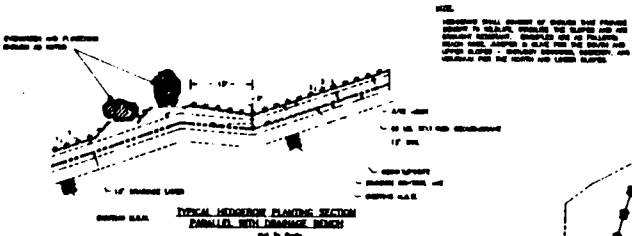


**APPENDIX 19
PROPOSED TRAIL SYSTEM**





8'-0"
 (6" DEPTH OF WOOD CHIPS)
 TYPICAL TRAIL SECTION
 Not To Scale

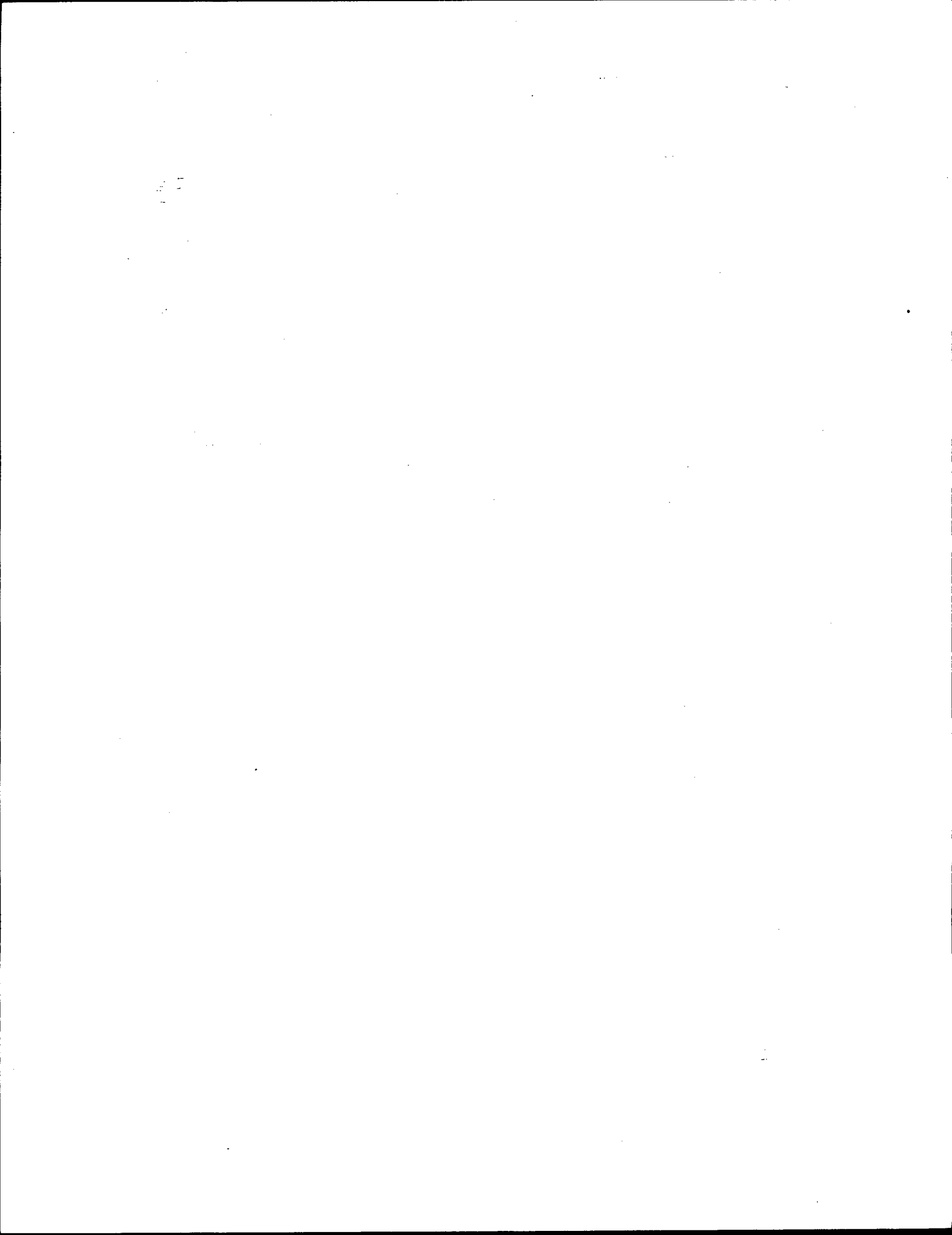


LEGEND

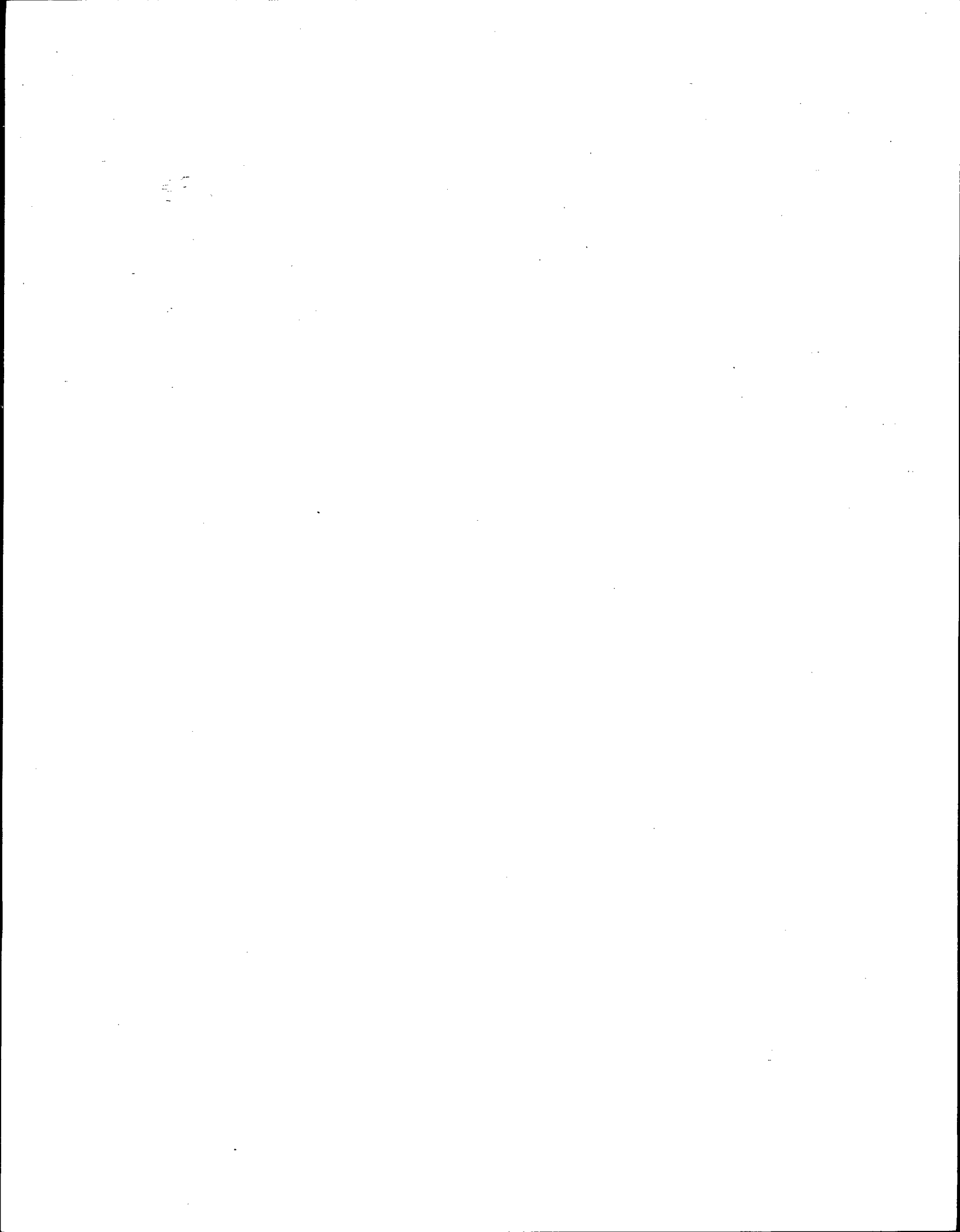
SYMBOL	DESCRIPTION
◆	PROPOSED TRAIL
⊕	FUTURE TRAIL EXPANSION
⊙	PROPOSED SHADE TREE (PIN OAK)
—	HEDGE ROW PLANTINGS



DATE	BY	REVISIONS	APPROVED BY
TOWN OF BROOKHAVEN SUFFOLK COUNTY, NEW YORK			
BROOKHAVEN LANDFILL			
PROPOSED TRAIL SYSTEM			
LOUIS K. McLEAN ASSOCIATES, P.C. CORPORATE ENGINEERS			
437 50 COUNTRY ROAD BROOKHAVEN, NEW YORK			
Designed by JMS	Scale 1" = 500'	Drawn by LKJ	Sheet No. 1
Checked by LKJ	Date Feb 1993	Drawn by LKJ	Scale Feb 1993
Approved by JMS	Plot No. 23-4201-A		

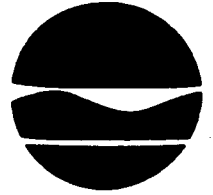


APPENDIX 20
LETTERS FROM NYSDEC REGARDING
THE DEEP FLOW RECHARGE ZONE



New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11790-2356

Telephone: (516) 751-7990
Facsimile: (516) 751-3839



Thomas C. Jorling
Commissioner

FEB 5 1992

Commissioner James Heil
Brookhaven Department of Waste Management
3233 Route 112
Medford, New York 11763

Dear Commissioner Heil:

This letter is to clarify recent communications between the Department and the Town of Brookhaven regarding the ongoing Part 360 hydrogeologic investigation for the Town's proposed new landfill.

The site of the Town's proposed landfill lies within hydrogeologic Zone VI, as defined in the Long Island Comprehensive Waste Management Plan (L.I. 208 Study). Environmental Conservation Law 27-0704.4 (Long Island Landfill Law) provides for the construction of this new landfill in Zone VI because it is outside the deep flow recharge area. However, operation, including site preparation, of a new landfill outside of the deep flow recharge area is only allowed pursuant to conditions set forth in paragraphs (a) through (g) of ECL 27-0704.4.

For new landfills, 6 NYCRR Part 360 requires a hydrogeologic investigation of sufficient detail to characterize the "critical stratigraphic section." Concerns raised by geologists within the Division of Solid Waste focus on the need for a complete characterization of the subsurface soils and groundwater in the vicinity of the proposed landfill. A comprehensive evaluation of the site's hydrogeology, keyed to a demonstrably functional groundwater monitoring plan, is essential if the Commissioner is to make an affirmative determination, in accordance with ECL 27-0704.4(a), that the landfill will not pose a threat to groundwater quality. Our geologists have been working closely with your consultant, Dvirka and Bartilucci, while they (D&B) finalize the March 1990 draft work plan to satisfy the requirements of ECL 27-0704.4(a) and 6 NYCRR Part 360-2.11 (Hydrogeologic Investigation).

From our discussions with D&B, we anticipate receiving the Final Part 360 Hydrogeologic Investigation Work Plan within the next few weeks. If you have any further questions on this matter, please contact Mr. Robert McNamee, Senior Engineering Geologist, at (516) 751-2617.

Sincerely,

A handwritten signature in black ink, appearing to read "Ray E. Cowen". The signature is fluid and cursive, with a long horizontal stroke at the end.

Ray E. Cowen, P.E.
Regional Director

REC:RJM:rjm



LANGDON MARSH
EXECUTIVE DEPUTY COMMISSIONER

To: L. Riley	From: Mark Mac...
Co.	Co.
Dept.	Phone #
Fax #	Fax #

ALBANY, NEW YORK 12233-1015

NOV 19 1990

The Honorable Henrietta Acampora
Supervisor, Town of Brookhaven
Brookhaven Town Hall
Patchogue, New York 11772

Dear Ms. Acampora:

This is to inform you that the Department has reviewed your Petition of May 9, 1990, requesting authorization to continue operation of Cell 4 of the Brookhaven Landfill (also referred to as the "Ski Bowl") pursuant to the Long Island Landfill Law, ECL 27-0704. On September 5, 1990, the Department corresponded with the Town, identifying deficiencies in the May 9 Petition. In response to that letter, the Town augmented its Petition by letter of October 3, 1990.

Pursuant to ECL 27-0704.5, the Commissioner must determine that the Town of Brookhaven has shown compliance with certain criteria in order to authorize continued operation of the landfill. Accordingly, as the Commissioner's delegatee, I hereby make the following findings, subject to modification in response to comment received in response to a public notice and hearing to be had pursuant to ECL 27-0704.5(f):

1. ECL 27-0704.5(a)--The Town will provide evidence of a financial guarantee, in accordance with condition (2)(d) below.
2. ECL 27-0704.5(b)--The Town will be required to show the effective operation of its liner and leachate collection system, in accordance with the condition (2)(a) below, prior to any disposal of waste. Also, pursuant to condition (2)(e) below, the Town must execute an inter-municipal agreement with the Suffolk County Sewer Agency providing for the treatment of leachate from the Brookhaven Landfill.
3. ECL 27-0704.5(c)--The Town is required to update existing information to ensure that the migration of methane gas or other gases is minimized, in accordance with the condition (2)(c) below, prior to any disposal of waste.

4. ECL 27-0704.5(d)--There is no evidence that the Town is accepting or will accept hazardous waste at its landfill. Additionally, in its letter of October 4, 1990, the Town indicated that it has in place an ordinance which prohibits disposal of hazardous waste at its facility. The Town also has agreed to adopt additional legislation in this regard and to establish a STOP facility at the Brookhaven Landfill. Finally, operating descriptions in the Town's facility application include training for facility personnel to identify potentially hazardous wastes which might be delivered to the facility for disposal.

5. ECL 27-0704.5(e)--The landfill is not located in a freshwater wetland, tidal wetland or floodplain.

6. ECL 27-0704.5(f)

--The landfill is located outside of the deep flow recharge area, as defined under ECL 27-0704.1;

--No resource recovery facility is available to accept the waste to be disposed at the landfill pursuant to this approval;

--The Town of Brookhaven has made reasonable effort to implement resource recovery. This effort includes (i) the execution of an inter-municipal Memorandum of Understanding leading to an agreement with the Town of Hempstead for energy resource recovery of part of Brookhaven's waste stream and for disposal of incinerator ash residues at the Brookhaven Landfill, and (ii) under condition (1)(b) below, Brookhaven is required to accept for disposal wastes from the Towns of Riverhead and Southold, thereby assisting in achieving a central objective of the Long Island Landfill Law to discontinue disposal of solid waste in unlined landfills. Acceptance of this obligation by the Town of Brookhaven also enhances the ability of the Towns of Riverhead and Southold to direct their resources toward implementation of recycling, composting and other resource recovery facilities; and

--The landfilling of wastes at the Brookhaven Landfill will pose no significant adverse environmental impacts. Prior to issuance of authorization to dispose of wastes in Cell 4 (Ski Bowl) of the landfill, the Town will have to ensure that measures included in the landfill design and operation will prevent any adverse impact on the environment, as specified in the design documents filed with the Department.

Based upon the above findings and in contemplation of final approval of the Town's Petition to continue landfilling under the Long Island Landfill Law, the Town of Brookhaven must comply with the following conditions:

(1) On or before December 18, 1990, the Town of Brookhaven must execute a modification of the Order on Consent, effective May 14, 1987, approved by the Department that at a minimum contains the following requirements:

Tmi
RRR

(a) The Town must develop and submit to the Department by January 1, 1991, a revision to its Solid Waste Management Plan that reflect current proposals. Such revision must address the requirements of 6 NYCRR 360-15.9 (a) through (c), with special emphasis on 360-15.9 (k) through (m). The various solid waste management systems must be implemented in accordance with the schedules identified in the Department-approved final Plan. In the interim, any identifiable milestones (e.g. issuance of an RFP for municipal solid waste and yard waste composting by January 15, 1991) will be included in the Consent Order.

Southold
Town
Director
\$90

(b) The Town must accept for disposal from the Towns of Riverhead and Southold a total of 55,000 tons per year of municipal solid waste, exclusive of yard waste, construction and demolition debris (clean fill) and recyclables that have been separated from the waste stream. It is expected that the Town will not charge an unreasonable tipping fee in relation to charges for comparable wastes generated by and disposed in the Town of Brookhaven.

Consent
status
Deadline

(c) Authorization to landfill wastes after December 18, 1990, other than the "products of resource recovery, incineration or composting...downtime wastes and untreatable wastes", in accordance with ECL 27-0704.5(f), second paragraph, is limited to disposal of waste only in Cell 4 (Ski Bowl) of the landfill. Such approval shall expire on January 1, 1993.

(d) Authorization to operate Cell 4 of the Town's landfill for disposal of only clean fill, as defined by ECL 27-0704.1 and 6 NYCRR 360-1.2(b)(22) and the "products of resource recovery, incineration or composting...downtime wastes and untreatable wastes", in accordance with ECL 27-0704.5(f), first paragraph, will continue to the capacity of Cell 4 (Ski Bowl), unless otherwise determined by the Department.

(e) Construction of Cell 4 (Ski Bowl) shall be in accordance with the conditions of construction approval set forth in the Department's letter of November 15, 1990. Prior to commencement of waste disposal, the Town must obtain the Department's written authorization to operate the Cell 4 (Ski Bowl), after completion of construction and after submission and approval of a construction certification document.

7

(f) The Town must resolve all outstanding violations of ECL Article 27, 6 NYCRR 360 or the requirements of any Departmental Order to the extent required by the Regional Director of the Department's Region 1.

(g) The Town must comply with any other conditions resulting from the review of new data submitted.

date

(2) On or before November 30, 1990 the Town shall submit to the Department:

status

(a) A assessment of the actual action leakage rate (in gallons per acre per day) of the existing Cell 4 (Ski Bowl) primary liner, the secondary leachate collection and removal system leachate flow volume data, its method of collection, and the time period of such collection. If this action leakage rate is in excess of 25 gallons per acre per day on a 30-day average, the Town must submit a remediation plan and schedule for the Department's review and approval. Such plan shall include (i) an operational plan discussing the routine monitoring of the action leakage rate so as to maintain the approved operational threshold of 25 gallons per acre per day on a 30-day average, and (ii) a contingency operations plan to be implemented in the event that the operational threshold is exceeded.

(b) A computation of available cell volume for Cell 4 (Ski Bowl), and a projection of cell life based upon the acceptance of (i) ash from the Town of Hempstead energy resource recovery facility, (ii) the remaining waste from the Town of Brookhaven that is not incinerated at the Hempstead facility, and (iii) approximately 55,000 tons per year of municipal solid waste in the aggregate from the Towns of Southold and Riverhead.

(c) A compilation of methane monitoring data, including location of monitoring points and time period of its collection, and a discussion of the effectiveness of the existing methane control system in all areas of the landfill.

7

(d) Evidence of financial guarantee that satisfies the requirements of ECL 27-0704.5(a).

✓

(e) An inter-municipal agreement with the Suffolk County Sewer Agency providing for the treatment of leachate from the Brookhaven Landfill, and data showing the composition of sludge generated by the County Sewer Agency that is destined for disposal at the Brookhaven Landfill.

Assure Plan
1-2 dcd [unclear]

✓ (f) An update of the Groundwater Assessment Report to incorporate recent groundwater data, and a proposed future groundwater sampling schedule for the Department's review and approval.

In the event that the Town of Brookhaven fails to meet any of the above conditions, the Town will be required to cease acceptance of wastes at its landfill which are otherwise prohibited pursuant to the Long Island Landfill Law.

The Department appreciates the willingness of the Town of Brookhaven to assist in addressing the solid waste disposal requirements of its neighboring Towns that you expressed in the October 30, 1990 meeting with Commissioner Jorling. It is only through such cooperation that Long Island will be able to efficiently and safely address its solid waste management needs.

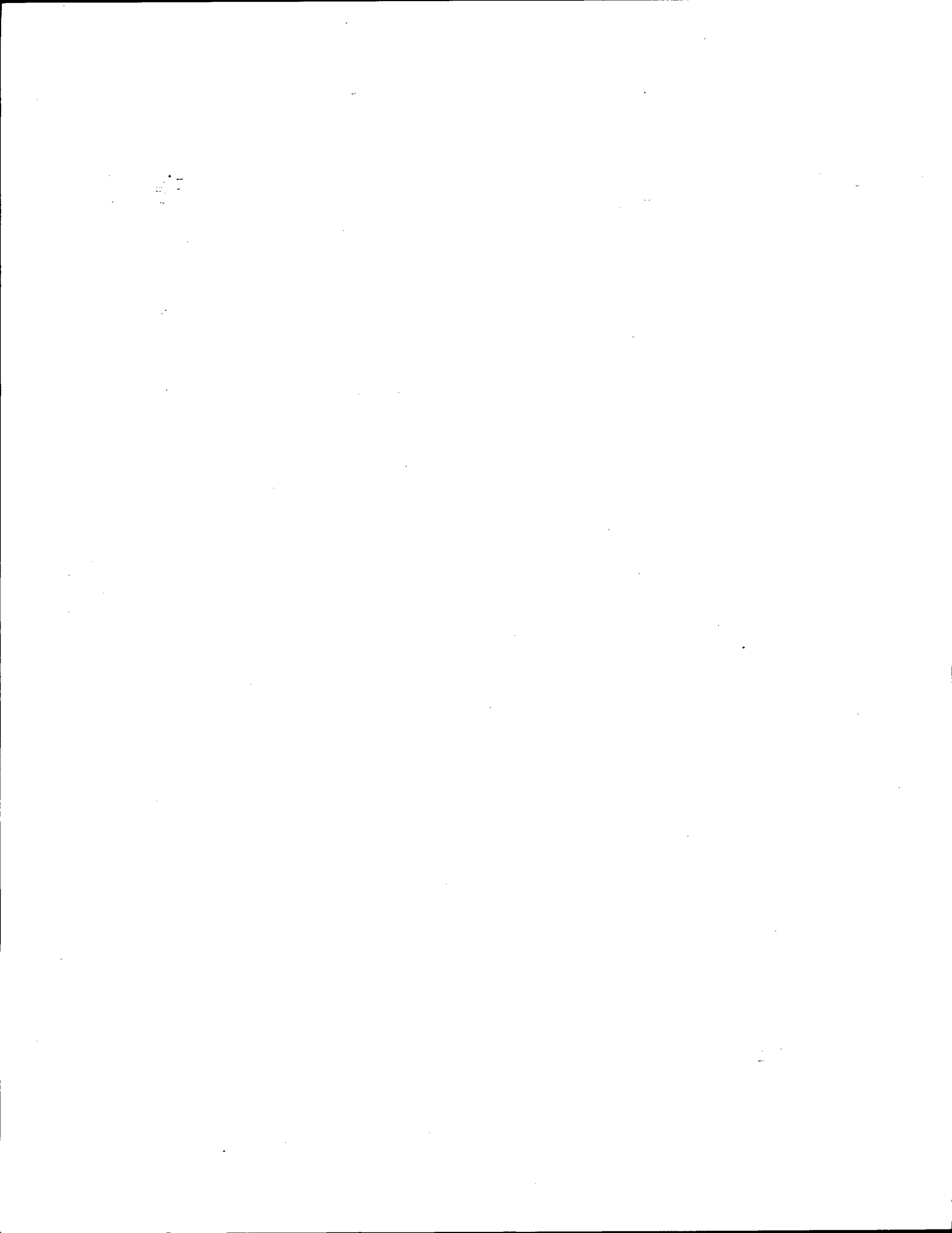
Sincerely,



Langdon Marsh
Executive Deputy Commissioner

cc. Commissioner Jorling

APPENDIX 21
DECEMBER 14, 1992 LETTER FROM R. G. SLAYBACK, PRESIDENT,
LEGGETTE, BRASHEARS AND GRAHAM TO EDWARD ROSAVICH,
SUFFOLK COUNTY WATER AUTHORITY



LEGGETTE, BRASHEARS & GRAHAM, INC.
PROFESSIONAL GROUND-WATER CONSULTANTS

R. C. SLAYBACK
 G. EDNEY FOX
 FRANK H. CRUM
 MICHAEL R. BURKE
 ROBERT LAMONICA
 WILLIAM K. BECKMAN
 DAN C. BUZZA
 J. KEVIN POWERS

72 DANBURY ROAD
 WILTON, CT 06897
 203-762-1207
 FAX 203-762-8063

JOHN NASO, JR.

DAVID SCOTT
 JEFFREY B. LENNOX
 FRANK J. CRITCHELL
 JOE K. BUEHLHOP
 DAVID A. WELBY
 ROBERT N. BRAUNSTEIN
 JOHN I. LAPAVE
 TERRANCE P. BRENNAN
 DAVID M. SCHANTZ

December 14, 1992

Mr. Edward Rosavitch, P.E.
 Chief Engineer
 Suffolk County Water Authority
 P. O. Box 38
 Oakdale, NY 11769

RE: Town of Brookhaven
 Landfill Expansion DEIS
 Station Road Wellfield Pumping Test

Dear Mr. Rosavitch:

As requested, we are pleased to respond to the oral comments by Mr. Ludlam during the public hearing on the subject SBQRA proceeding held on November 10, 1992, and found in the hearing transcript beginning on page 90. These comments deal with the potential impact on the Magothy aquifer and particularly the Magothy well at the Station Road Well Field, as well as our decision to limit the recent pumping test to the Upper Glacial aquifer wells.

Several considerations led us to focus on the Upper Glacial aquifer. First, we were reasonably confident that the present landfill was not within the zone of capture of the Upper Glacial wells, based on water-quality data and, more importantly, the usual water-table coefficient of storage (specific yield) and early stabilization typical of the Upper Glacial aquifer and wells completed in it. The key question, as we saw it, was whether adding a new cell closer to the well field would involve the zone of capture. Similarly, using the typical semi-artesian storage coefficients associated with the Magothy aquifer, 0.001 or smaller, we concluded that the potential zone of capture of Station Road Well 3 (the Magothy well) almost certainly extended beyond the existing landfill, and so the expansion had little new impact. Of course, for a real impact potential to exist, vertical flow gradients would have to be downward along the entire flow path.

We looked further at the existing head relationships between the Magothy and the Upper Glacial in this vicinity, which imply that flow gradients are slightly upward

RAMSEY, NEW JERSEY

ST. PAUL, MINNESOTA

TAMPA, FLORIDA

SIOUX FALLS, SOUTH DAKOTA

EXTON, PENNSYLVANIA

NASHUA, NEW HAMPSHIRE

FISHKILL, NEW YORK

Mr. Edward Rosavitch, P.E.

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December 14, 1992

to neutral. This indicates that most ground-water flow in the Upper Glacial is sub-horizontal to the southeast, with very little vertical flow potential.

We also looked at the local stratigraphy, based on the geophysical logs and core log of Well 3. The boundary between the Upper Glacial and Magothy formations occurred at a depth of 159 feet, and Well 3 was screened from 455 to 515 feet. In the interval below the Upper Glacial contact, the Magothy showed its usual interbedding of sands, silts, silty sands, sandy silts and clays, with significant clays logged from 308 to 320 feet and 368 to 392 feet. During the Upper Glacial pumping test, no effect was observed at Well 3, further confirming a lack of intimate hydraulic communication.

Based on these considerations, it was and remains our view that the existing landfill and the proposed Cell No. 5 constitute a minimal threat to Station Road Well 3, and that Cell No. 5 would not pose any more threat than the existing facility. As the Upper Glacial test and the resulting extrapolations indicate, the proposed Cell No. 5 is not within the zone of capture of Wells 1 and 2 in the Upper Glacial aquifer, even if operated at their full authorized capacity.

I hope this response meets your needs and will be pleased to respond to questions.

Very truly yours,

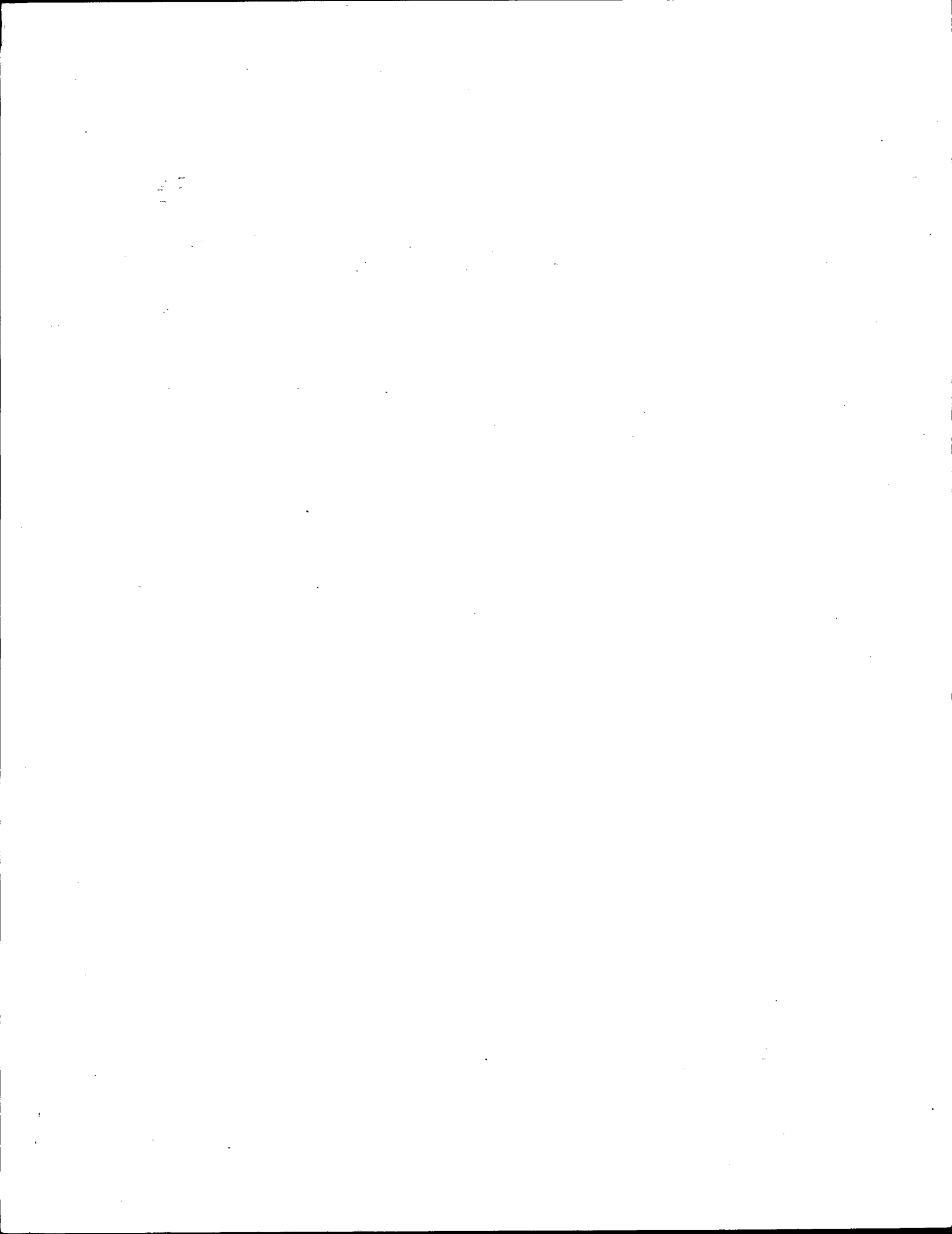
LEGGETTE, BRASHEARS & GRAHAM, INC.

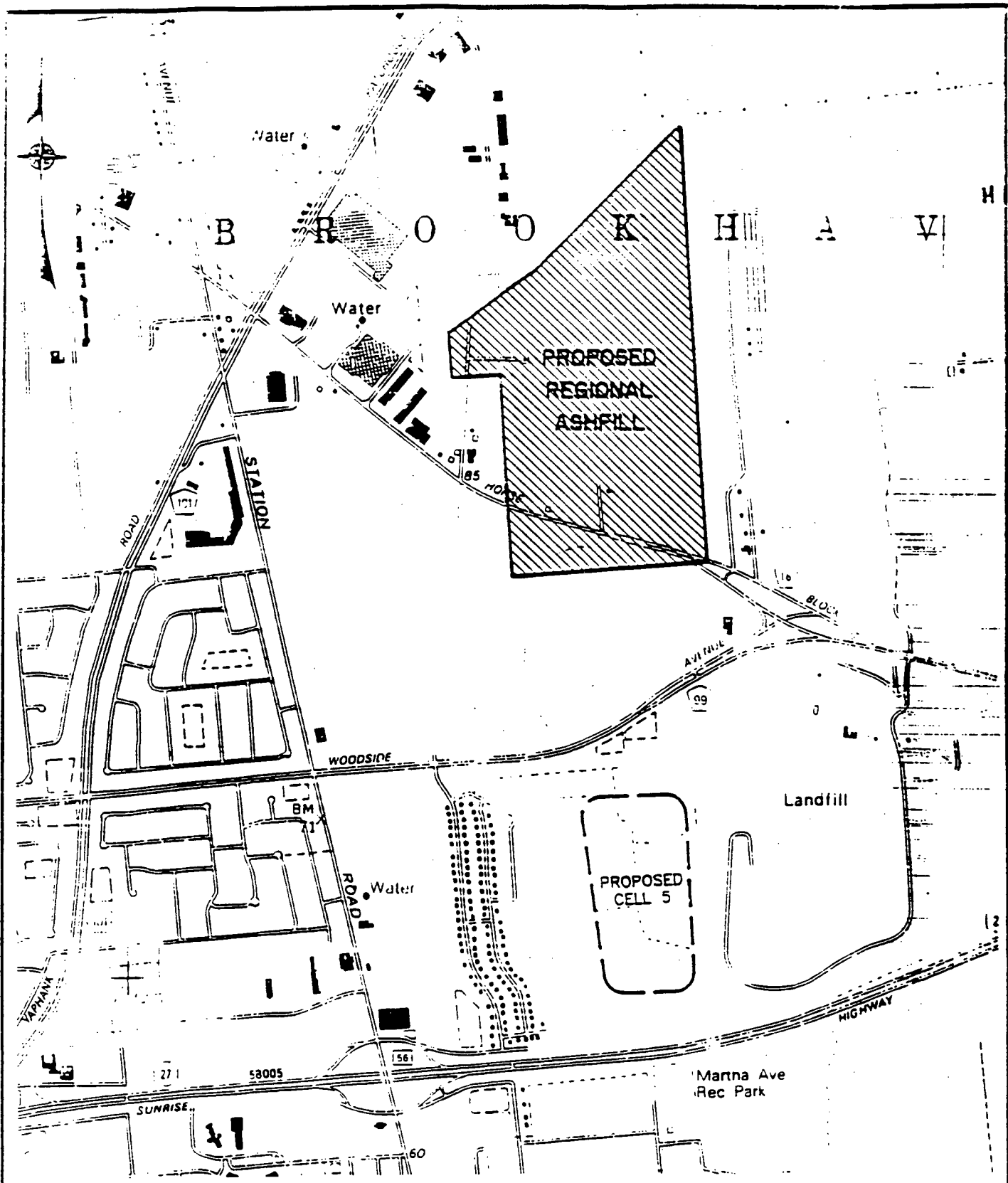


R. G. Slayback, CPG
President

RGS:dmt
ltrosa/92rgs1

APPENDIX 22
LOCATION OF PROPOSED REGIONAL ASHFILL





Source: Voorhis, Charles J., Discussion of Hydrogeologic Zone Boundaries in the Vicinity of South Yaphank, Long Island, New York, January, 1986

0 1500
SCALE IN FEET

BROOKHAVEN LANDFILL CELL 5 FEIS



LOCATION OF PROPOSED REGIONAL ASHFILL

FIGURE 1

