Solid Waste Management Program

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DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT/SOLID WASTE MANAGEMENT PLAN

EXECUTIVE SUMMARY

ANSWERS Wasteshed

August 1990

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ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

DOCUMENT:

DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT/SOLID WASTE MANAGEMENT PLAN (DRAFT GEIS/SWM PLAN)

PROJECT:

ANSWERS WASTESHED SOLID WASTE MANAGEMENT PROGRAM

LOCATION:

ANSWERS WASTESHED, ALBANY COUNTY, NEW YORK (EXCLUDING THE TOWN OF COLONIE AND THE VILLAGES OF COLONIE AND MENANDS) AND THE CITIES OF RENSSELAER, NEW YORK AND SCHENECTADY, NEW YORK

LEAD AGENCY:

CITY OF ALBANY, NEW YORK

PROJECT SPONSOR AND ADDRESS TO WHICH COMMENTS SHOULD BE SENT:

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DATE OF ACCEPTANCE: 8-20-90

FINAL DATE FOR FILING COMMENTS: 10-4-90

THIS DOCUMENT IS PRINTED ON RECYCLED PAPER

0942-19-1

NOTICE OF FUNDING

The preparation of this GEIS/SWM Plan is partially funded under the New York State Solid Waste Management Act of 1988 (Chapter 70, Laws of 1988) by means of a Comprehensive Solid Waste Management Planning Grant

ANSWERS WASTESHED
DRAFT GEIS/SWM PLAN
EXECUTIVE SUMMARY

TABLE OF CONTENTS

ANSWERS WASTESHED
DRAFT GEIS/SWM PLAN
EXECUTIVE SUMMARY

TABLE OF CONTENTS
(continued)

ANSWERS WASTESHED
DRAFT GEIS/SWM PLAN
EXECUTIVE SUMMARY

LIST OF TABLES

EXECUTIVE SUMMARY

This executive summary, as a stand alone document, is not intended to satisfy the requirements of 6 NYCRR Part 360, State Environmental Quality Review Act (SEQR). A copy of the complete draft Generic Environmental Impact Statement/Solid Waste Management Plan which satisfies SEQR will be available for public review at the following libraries:

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ANSWERS WASTESHED
DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT/
SOLID WASTE MANAGEMENT PROGRAM

EXECUTIVE SUMMARY

PREFACE

The development of a solid waste management program for the ANSWERS Wasteshed Planning Unit (the Planning Unit) is subject to the New York State Environmental Quality Review (SEQR) process, 6 NYCRR Part 617. The SEQR Act suggests a Generic Environmental Impact Statement (GEIS) as a means for agencies to review the conceptual framework of a proposed plan, and thus give early consideration to environmental factors, as well as social and economic issues. This document presents a combined draft GEIS and the solid waste management plan (SWM Plan) for the Planning Unit.

The geographic scope of this GEIS/SWM Plan is the communities composing the Planning Unit. Table ES-1 and Figure ES-1 present a listing of the communities currently composing the Planning Unit and their locations, respectively.

The Planning Unit was created in early 1989 by resolutions passed by each of the member municipalities. The City prepared an Environmental Assessment Form (EAF) to determine whether the proposed action would have a significant impact on the environment. Based on the EAF, it was determined that the development of a long-term solid waste management program may have significant environmental impacts. After corresponding with over 100 potentially involved and interested agencies to seek their concurrence, and based on resolutions passed by each of the Planning Unit members, the City of Albany (City) has been designated as lead agency for the review of this draft GEIS/SWM Plan, pursuant to SEQR requirements. The City, as lead agency on behalf of the Planning Unit has prepared this draft GEIS/SWM Plan.

This draft GEIS/SWM Plan defines the Plan, addresses its environmental, social and economic impacts, and presents an approach and criteria for siting the recommended additional solid waste management facilities. Implementation of the Plan will require the selection of a site for each

of the recommended additional facilities, and may require preparation of a site-specific EIS to address site- and technology-specific environmental impacts and support permit applications to the New York State Department of Environmental Conservation (NYSDEC). After the City, as lead agency, determines that this draft GEIS/SWM Plan is complete, it will be released for public review and comment. After this review process, the City will prepare a final GEIS/SWM Plan which will incorporate public comments and appropriate changes. The City may also opt to issue a supplementary draft GEIS/SWM Plan prior to the final GEIS/SWM Plan to incorporate the application of siting criteria to the Wasteshed. If so, the issuance of the supplemental GEIS/SWM Plan would be followed by a public review and comment period. After issuance of the final GEIS/SWM Plan, the City, as Lead Agency for the Planning Unit, will prepare and adopt a findings statement on the final GEIS/SWM Plan.

OVERVIEW OF THE PROPOSED PLAN

The Plan for the ANSWERS Wasteshed incorporates implementation of a recycling program of waste reduction, recycling and reuse; continuation of the Albany New York Solid Waste Energy Recovery System (ANSWERS); and implementation of a long-term state-of-the-art landfill for disposal of non-processible waste, bypass waste from ANSWERS and incinerator residue generated by ANSWERS. This combination provides an integrated approach that effectively addresses environmental, technical, and economic considerations. The Plan also includes provision for a backup technology, should the ANSWERS RDF Plant, for any reason, be unable to successfully process and market RDF. Figure ES-2 presents a diagram of the solid waste management program recommended in the Plan. This section outlines the major components of the Plan.

Waste Reduction

The New York State Solid Waste Management Plan (NYSSWMP) identifies a goal of 50 percent waste reduction, recycling and reuse of solid waste by 1997, including eight to ten percent from waste reduction. Since implementation of waste reduction initiatives is more appropriately within the purview of the State and federal governments than that of local

municipal governments, the Planning Unit's role in waste reduction will be to support State and federal legislative efforts on waste reduction and to encourage conservation through public education programs designed to reduce the purchase of non-recyclable and non-reusable materials. For example, the City, on behalf of the Planning Unit, will continue to sponsor education and public information programs on the topic of waste reduction, such as the City's recent television commercials promoting waste reduction.

Recycling and Reuse Programs

Recycling and reuse of materials helps to reduce the volume of waste requiring disposal. The Planning Unit has developed an aggressive recycling program designed to assist the ANSWERS Wasteshed in meeting the State's goal of recycling and reusing 40 to 42 percent (by weight) of the solid waste stream. A three-phased plan is proposed; in general, the Plan proposes a strategy for implementing programs for recycling the following materials:

- Residential Sector:
  - Newspaper,
  - Plastic (HDPE and PET),
  - Glass,
  - Aluminum cans,
  - Ferrous cans,
  - Corrugated cardboard;
- Commercial Sector:
  - Paper,
  - Corrugated cardboard,
  - Plastic,
  - Metal;
- Leaf and Yard Waste;
- White Goods;
- Tires;
- Waste Oil
- Construction and Demolition (C&D) Debris;
- Wastewater Treatment Plant Sludge (as compost); and
- Metals from Mixed Municipal Waste Stream.

programs will be used to generally educate residents and promote recycling and waste reduction within the Planning Unit. At present, the City is promoting waste reduction via television commercials and recycling through radio announcements. In addition, specific promotional programs will be used for new recycling efforts within the ANSWERS Wasteshed. Public awareness efforts may include use of the following, where appropriate:

- Radio Announcements;
- Television Commercials;
- Press Conferences;
- Door Hangers;
- Brochures/Flyers; and
- Elementary/Secondary Education.

Continuation of ANSWERS

In 1982, the City of Albany and the State of New York (State), in a joint project, commenced operation of ANSWERS to serve as part of an integrated system to manage the solid waste processing/disposal needs of the Planning Unit. ANSWERS is a regional resource recovery program which currently processes approximately 500 tons per day (tpd) of solid waste (five days per week), produces a refuse-derived fuel (RDF) for steam generation and recovers energy and recyclable ferrous materials. ANSWERS consists of two separate facilities: a Refuse-Derived Fuel (RDF) Processing Plant (RDF Plant) owned by the City and operated under a contract with a private vendor, and the New York State Office of General Services (OGS) Steam Plant (OGS Steam Plant) owned by the State and operated by the OGS. The ANSWERS project is secured by a 20-year Contract under which the City produces RDF for purchase by the OGS. The energy produced by combusting the RDF is recovered as steam and used for heating and cooling purposes at the Empire State Plaza and other major State buildings in the City.

One of the goals of this Plan is to identify an appropriate future role of ANSWERS in continuing to serve the needs of the ANSWERS Wasteshed communities. ANSWERS is evaluated in terms of technical, environmental, contractual and economic considerations. Based on the evaluations performed, ANSWERS offers the Planning Unit a technically sound and economically attractive method of processing and disposing of portions of

the waste stream in a manner which complies with environmental requirements. Therefore, the recommended Plan includes continuation of ANSWERS, minimally, through the term of the ANSWERS contract which expires in the year 2002, and, if mutually agreeable to the City and the State, beyond the term of the Agreement. The continuation of ANSWERS represents a no-action alternative for processing/disposing of a portion of the waste stream generated in the Planning Unit. For planning purposes, however, it has been assumed that landfill capacity will be required for all unrecycled waste managed by the Planning Unit for the period 2003 through 2013, the years in the planning period beyond the expiration date of the ANSWERS Contract.

Landfill Facility

The recommended Plan also includes implementation of a new long-term landfill to handle disposal of (a) waste which is not recycled or reused, and is not processible at ANSWERS; (b) bypass waste from ANSWERS; and (c) incinerator residue produced at the OGS Steam Plant. It is recommended that the Planning Unit acquire one or more sites for locating a landfill within the ANSWERS Wasteshed. An estimated 100 to 130 acres of landfill fill area will be needed during the twenty-year planning period (1994-2013). Including area for administrative activities and buffer requirements, a minimum acreage purchase requirement of approximately 250 acres is recommended. Landfill sizing assumptions include capacity for all waste which is not recycled or reused after the year 2002 through the end of the planning period. Implementation of the long-term landfill will be phased, with only a limited portion of the acreage initially developed for landfilling.

Household Hazardous Waste Program

As part of the implementation of the recycling plan, it is recommended that the Planning Unit assist individual municipalities to expand existing municipal household hazardous waste collection programs. As part of these programs, household hazardous waste collection days will be established. Residents would be notified of the collection date and would transport their materials to the household hazardous waste drop-off center, where the materials would be separated and prepared by or on

behalf of the municipalities for transport to and disposal at a permitted hazardous waste disposal facility. Household batteries will be included in this program, unless separate collection is deemed appropriate by current markets.

Siting Approach and Criteria

An approach to siting recycling facilities and landfills is presented as part of this draft GEIS/SWM Plan. The siting approach is three phased:

- Phase 1: Exclusionary Phase;
- Phase 2: Preferred Area Phase; and
- Phase 3: Evaluation/Recommendation Phase.

As part of the implementation of the Plan, it is recommended that the siting criteria be applied to the ANSWERS Wasteshed to identify locations for siting the proposed solid waste management facilities.

The application of the three phases of landfill siting criteria should result in the recommendation of several potential landfill sites for further study. The application of the recycling facility siting criteria should result in the identification of the ANSWERS site among others which might be appropriate for development of the recommended MRF. The City plans to issue, in 1990, a request for proposals for the procurement of a full-service MRF.

Projected Implementation Schedule

Figure ES-3 shows the proposed schedule for implementing major components of the Plan. As shown in Figure ES-3, Phase I of the Recycling Plan has already commenced, the MRF is expected to be on-line in 1992, and the long-term landfill may be required to commence operations as early as 1994.

INTRODUCTION

In 1982, the City of Albany and the State of New York, began operation of a joint solid waste energy recovery project referred to as ANSWERS, the Albany New York Solid Waste Energy Recovery System. ANSWERS is a regional solid waste management project. As part of this project, the City owns and operates the ANSWERS RDF Plant which processes incoming

solid waste into RDF. The RDF is sold to the State under a long-term contract, and used as a fuel at the State's OGS Steam Plant.

The City also owns and operates the Greater Albany Landfill which accepts non-processible waste, bypass waste from ANSWERS, and incinerator residue generated by the OGS Steam Plant.

The City has, over the years, entered into long-term contracts with many of the ANSWERS Wasteshed communities for the processing and disposal of residential and commercial waste. Individual municipalities currently retain responsibility for processing and disposal of other components of the waste stream including leaf and yard waste and construction and demolition debris. Individual municipalities are also responsible for collection and transport of solid waste to the facilities designated in their contract with the City.

In October 1985, the Greater Albany Landfill came under consent order by the New York State Department of Environmental Conservation (NYSDEC). Phased closure of this landfill has been proceeding since 1982, and it is anticipated that the landfill will reach capacity in 1990. The City has proceeded to implement an interim landfill at a site adjacent to the Greater Albany Landfill, referred to as the Rapp Road Landfill. The permit for construction of this interim landfill was issued on March 2, 1990.

The members of the Planning Unit have joined together to develop a long-term solid waste management project to provide for the ANSWERS Wasteshed solid waste needs after the interim landfill reaches capacity. This development of a solid waste management program for the Planning Unit is subject to SEQR. The City has been designated as lead agency for the subsequent development of the GEIS/SWM Plan.

Legislation which has been endorsed by the ANSWERS Wasteshed communities and which would create an ANSWERS Wasteshed Solid Waste Management Authority (Authority) was introduced in 1989 in the New York State Legislation. However, this legislation was not passed prior to the close of the legislative session. It is expected that this legislation will be reintroduced at the commencement of the next legislative session. After its creation, the Authority will have the power to regulate the management of solid waste generated within the ANSWERS Wasteshed.

The City, on behalf of the Planning Unit, has assembled a project team to assist in developing a solid waste management program. The

project team includes the following members representing the City of Albany: the Commissioner of the Department of Public Works, the Director of the Planning Department, Corporation Counsel from the City's Department of Law, and the Director and Deputy Director from the City's Budget Department. In addition, to date, Malcolm Pirnie, Inc. has been retained to provide technical services; and Nixon, Hargrave, Devans & Doyle, serves as special legal counsel to the Planning Unit. The City has also formed an Advisory Committee (AC) to serve as a channel for receiving input from the members of the Planning Unit and their constituents and disseminating project information.

Although formal scoping of potential project issues is not required by SEQR, the City, on behalf of the Planning Unit, elected to hold formal public scoping meetings on May 18, 1989. The City then prepared a scoping responsiveness document addressing questions and comments raised at the scoping meetings.

In developing this GEIS/SWM Plan, the City also solicited public input on the siting approach and criteria proposed for use in the plan. Two public meetings were held on August 30, 1989, for this purpose. The City then prepared a siting responsiveness document addressing questions and comments raised at the siting meetings.

The SEQR process also provides for public input throughout the planning and decision-making process to ensure that the key issues in developing a project are addressed prior to decision-making. A public comment period of 45 days will be provided for public review of the draft GEIS/SWM Plan.

The City may opt to issue a supplemental GEIS/SWM Plan which addresses the application of the siting criteria to the Wasteshed. If so, the issuance of the supplemental GEIS/SWM Plan would be followed by a public review and comment period. After public review of the draft GEIS/SWM Plan, and, if applicable, a supplemental GEIS/SWM Plan, a final GEIS/SWM Plan will be prepared. The final GEIS/SWM Plan document will address all substantive comments received during the public comment period(s). The City as lead agency will then file the final GEIS/SWM Plan, and prepare a findings statement, both of which provide the basis for subsequent action by the lead agency.

DESCRIPTION OF THE PROPOSED ACTION

The ANSWERS Wasteshed is located in east-central New York State, approximately 140 miles north of New York City, and covers approximately 483 square miles. In 1988, the ANSWERS Wasteshed population was approximately 281,000, and it is expected to increase to approximately 282,000 by the end of the planning period, the year 2013. The Planning Unit's 15 municipalities are composed of five cities, two villages, and eight towns.

The solid waste disposal needs of the ANSWERS Wasteshed are currently managed with the following solid waste processing/disposal facilities:

- various recycling and reuse programs;
- ANSWERS;
- the Greater Albany Landfill;
- the Town of Coeymans Landfill;
- private and individual municipal construction and demolition debris landfills;
- individual municipal leaf and yard waste programs;
- wastewater treatment plant sludge disposal facilities managed by individual sewer districts; and
- water treatment plant sludge disposal managed by individual water authorities.

Medical waste in the ANSWERS Wasteshed is currently managed by individual hospitals using hospital incinerators. Hospital incinerator ash (non-hazardous) is and will continue to be managed by the Planning Unit. At present, consideration is being given to implementation of a regional medical waste autoclave facility to handle medical wastes. If this proposal is implemented, and the ANSWERS Wasteshed participates in this regional program, the hospital incinerator ash currently being disposed will cease to exist. The quantity of medical waste in the region indicates that, even if a) the regional autoclave facility were sited in the ANSWERS Wasteshed, and b) the Planning Unit were to manage disposal of autoclaved materials, the quantities involved are not substantial enough to significantly impact the planning and sizing of facilities presented herein.

The Greater Albany Landfill and the Town of Coeymans Landfill are both under consent order to close. The need to obtain additional solid waste disposal capacity, and to implement State mandated recycling programs, has created the need to re-evaluate waste disposal methods in

the Planning Unit and develop expanded strategies of solid waste management.

The proposed action is the development of the solid waste management plan recommended in this GEIS/SWM Plan. The Plan for the ANSWERS Wasteshed incorporates implementation of a recycling program of waste reduction, recycling and reuse; continuation of the Albany New York Solid Waste Energy Recovery System (ANSWERS); and implementation of a long-term state-of-the-art landfill for disposal of non-processible waste, bypass waste from ANSWERS, and incinerator residue generated by ANSWERS. This combination provides an integrated approach that effectively addresses environmental, technical, and economic considerations. The Plan also includes provision for a backup technology, should ANSWERS, for any reason, be unable to successfully process and market RDF.

The Planning Unit will be responsible for all aspects of the Plan not specifically delegated to other parties as follows:

Individual Municipalities

- Solid waste collection and transportation to designated solid waste processing and disposal facilities.
- Implementation of source-separation recycling programs to coordinate with the overall Wasteshed program.
- Recycling, processing and disposal of leaf and yard waste in accordance with the goals of the Plan.
- Recycling, processing and disposal of construction and demolition debris in accordance with the goals of the Plan.
- Maintaining records of quantities of waste recycled or reused as part of individual municipal recycling efforts (independent of Planning Unit MRF).
- Adoption of waste flow control, source separation and other ordinances as needed to support the Plan.

Sewer Districts

- Management of wastewater treatment plant sludge generated at their respective municipal wastewater treatment plants.
- If applicable, management of any hazardous sludge incinerator residue or hazardous wastewater treatment plant skimmings.

Water Authorities

- Management of water treatment plant sludge generated at their respective water treatment plants.

ALTERNATIVES TO THE PROPOSED ACTION

SEQR requires the consideration of reasonable alternatives that achieve the same or similar objectives, have relatively the same or reduced adverse environmental effects, and can be implemented in a time frame similar to that of the proposed action. The following five alternatives to the proposed action have been considered:

- No-Action Alternative - Existing solid waste disposal practices would continue in the ANSWERS Wasteshed. Landfilling at the Greater Albany Landfill and the Town of Coeymans Landfill would continue, at least initially, as the primary means of waste disposal. The interim landfill would then be used, assuming regulatory approvals are obtained, for a limited period of up to four years. Existing recycling programs would not be expanded.

- More Immediate Implementation Alternative - The Planning Unit would accelerate the proposed schedule for program planning, acquisition of a site(s), selection of technology(ies), procurement of vendor services, and construction of solid waste management facilities.

- Expanded Planning Unit Plan Development Alternatives - This alternative would involve the planning and development of a broader regional solid waste management program for both the Planning Unit and one or more neighboring counties in the Capital District (Albany, Rensselaer, Schenectady and Saratoga Counties).

- Reliance on the Private Sector - This alternative would involve entering into an agreement with a private company for management, disposal or processing of solid waste either in another county or state, or within the Planning Unit. This alternative includes proposals made by American Ref-Fuel and TEAMCO, Inc.

- Waste Exportation - This alternative would involve exportation of the ANSWERS Wasteshed waste-stream out of the Planning Unit, to a solid waste processing/disposal facility managed by the public or private sector.

The No-Action alternative is not feasible for several reasons. Current landfill capacity, along with the present recycling efforts, cannot continue as the primary means of solid waste management since the

existing landfills are under NYSDEC consent orders to close, and present recycling efforts will not attain the State goal. Even including the additional landfill capacity of the proposed interim landfill, the ANSWERS Wasteshed communities may need alternative processing/disposal capacity by as early as 1994.

More immediate implementation of a waste disposal facility is not feasible, given the current fast-tracked approach and SEQR requirements.

Reliance on the public sector is not recommended for several reasons. Most importantly, the Planning Unit currently has in place a technically-sound, economically-attractive solid waste processing/disposal technology to handle processible waste generated in the ANSWERS Wasteshed -- the ANSWERS project. The existing contract for this project extends to the year 2002. Therefore, at this time, the only processing/disposal needs of the Planning Unit are for non-processible waste, bypass waste from ANSWERS and incinerator residue from the OGS Steam Plant. Existing proposals offered by the private sector address primarily the processible segments of the waste stream, i.e., those components for which the Planning Unit already has a viable solid waste management system.

Finally, the Planning Unit has opted not to increase its size at the present time. Although expansion of the Planning Unit may be considered in the future, the currently required time frame, and the inherent risks to the Planning Unit of failing to meet its tight schedule are prohibitive. In addition, several neighboring counties -- Rensselaer County and Saratoga County -- are proceeding independently with solid waste management planning. It is, therefore, in the best interest of the Planning Unit to develop the Plan.

SOLID WASTE STREAM ANALYSIS

One of the major components in developing a solid waste management plan is an analysis of the solid waste stream in terms of current and projected quantities and composition. This information is used to estimate the potential impacts of recycling, reuse, and waste reduction on the projected waste stream, as well as the needed capacity at solid waste management facilities.

Twenty solid waste components are addressed in this GEIS/SWM Plan:

- Residential Waste;
- Commercial Waste (including non-hazardous industrial waste);
- Tires;
- White Goods;
- Waste Oil;
- Leaf and Yard Waste;
- Construction & Demolition Debris;
- Water Treatment Plant Sludge;
- Wastewater Treatment Plant Sludge;
- Air Pollution Control Sludge;
- Contained Gaseous Materials;
- Hospital Incinerator Residue;
- Wastewater Treatment Plant Skimmings;
- Discarded Cars;
- Power Plant Ash;
- Offal;
- Oil-Soaked Dirt;
- Returnable Container Act Materials;
- Sludge Incinerator Residue; and
- OGS Incinerator Residue.

1988 Solid Waste Quantities

An estimate of the quantity of solid waste generated in the ANSWERS Wasteshed in 1988 is presented based on 1988 ANSWERS scale house records, and information available from solid waste generators and haulers, State and local agencies and municipal representatives. Based on this information, the estimated 1988 solid waste generation rate for the ANSWERS Wasteshed is approximately 1,300 tons per day or approximately nine pounds per capita per day (pcd). Although this estimate may appear high, the ANSWERS Wasteshed solid waste stream includes a number of components of significant quantity that are not typically included in solid waste stream estimates, such as construction and demolition debris, sludges, offal, oil-soaked dirt and discarded cars. The estimated 1988 solid waste generation rate for those materials more typically referred to as "municipal solid waste", i.e., residential waste, commercial waste, leaf and yard waste, tires and waste oil, is approximately 5.7 pounds per capita per day. The 1988 waste generation rate for the 20 components of the ANSWERS Wasteshed's non-hazardous solid waste stream are as follows:

Solid Waste Stream Component	Estimated Waste Generation Rate (tpd)
Residential Waste	407
Commercial Waste	272
Tires	8
White Goods	6
Waste Oil	11
Leaf and Yard Waste	115
Construction and Demolition Debris	203
Water Treatment Plant Sludge (@ 25% solids)	9
Wastewater Treatment Plant Sludge (@ 25% solids)	170
Air Treatment Control Sludge	0
Contained Gaseous Material	0
Hospital Incinerator Residue (@ 25% moisture)	3
Wastewater Treatment Plant Skimmings	3
Discarded Cars	36
Power Plant Ash	<1
Offal	10
Oil-Soaked Dirt	62[1]
Returnable Container Act Materials	19
Sludge Incinerator Residue	N/A[2]
OGS Incinerator Residue	N/A[2]
Rounded Total	1,300 tpd

1988 Solid Waste Composition

Estimates of the composition of the commercial and residential waste generated in the Planning Unit are necessary for the development of the recycling programs. The composition of the Planning Unit's residential and commercial waste is estimated as follows, based on general composition data available from waste composition studies performed for a number of communities in New York State and other northeastern states:

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[1]Not all of the oil-soaked dirt delivered to the ANSWERS scale house is generated in the ANSWERS Wasteshed.

[2]The 3,900 tons of Sludge Incinerator Residue generated from the burning of wastewater treatment plant sludge in 1988 and the 26,000 tons of OGS Incinerator Residue generated from the incineration of RDF are not included in the total since the materials which, when processed, result in these residues, are already counted.

	Percent by Weight	
	Average	Range
Paper and Corrugated	47	42-60
Plastics	7	5-11
Metals	11	10-12
Glass	8	5-12
Food Waste	5	0-14
Wood	13	8-17
Textiles, Leather and Rubber	3	1- 5
Fines (brick, ashes, dirt, etc.)	4	0-11
Other	2	0-18
	100	

Projected Solid Waste Quantities

Solid waste projections are a function of population and per capita waste generation rates, the latter assumed to increase at a rate of approximately one percent each year. (The basis for this assumption and the method for projecting each of the solid waste stream components is described in detail in Section 4.0 of the GEIS/SWM Plan.) As a result, the solid waste generation rate for the ANSWERS Wasteshed, before consideration of waste reduction, is estimated as approximately 550,000 tons per year, or approximately 1,500 tpd by the year 2000, and, in the year 2013, the last year of the planning period, as approximately 600,000 tons per year, or approximately 1,640 tpd. These figures represent the total quantity of waste generated prior to any waste reduction, reuse, and recycling.

Waste Reduction

The NYSSWMP identified a goal of eight to ten percent waste reduction by 1997. Waste reduction is given highest priority in the State's solid waste management hierarchy, but it is generally recognized that effective implementation will require State and possibly federal legislation. Some examples of waste reduction practices would be changes in the way goods are manufactured and packaged to reduce the wastes associated with each product. Expansion of the Returnable Container Act and institution of legislative tax incentives are also cited by NYSDEC as possible methods

of waste reduction. Waste reduction quantities (including RCA materials) are estimated as a minimum of approximately 19,700 tons per year, or approximately 54 tpd by the year 2000, and are expected to meet or exceed this minimum through the remainder of the planning period.

Recycling and Reuse

Recycling is given high priority in the State's solid waste management hierarchy. As described in Volume III of the GEIS/SWM Plan, Recycling Plan, the Planning Unit proposes a set of recycling and reuse programs designed to meet the State goal of reducing the waste stream by 50 percent by 1997 through a combination of waste reduction, recycling and reuse. Recyclable materials addressed in the Recycling Plan include paper, bottles and cans, plastics, metals, waste oil, leaf and yard waste, construction and demolition debris, tires, and white goods. Recycling and reuse quantities are estimated to be approximately 257,000 tons per year or approximately 700 tpd in the year 2000, and approximately 284,000 tons per year or approximately 780 tpd in 2013, the last year of the planning period.

The Resultant Waste Stream

The resultant waste stream is that quantity of solid waste requiring disposal after waste reduction, reuse, and recycling. The resultant waste stream is estimated to be approximately 250,000 tons per year or approximately 680 tpd in 1988; approximately 160,000 tons per year, or approximately 440 tpd in the year 2000; and approximately 190,000 tons per year, or approximately 520 tpd in 2013, the last year of the planning period. The projected resultant waste stream quantities are used in the technology evaluation presented in Section 5.0 of the GEIS/SWM Plan in an evaluation of the need for additional solid waste processing/disposal capacity in the ANSWERS Wasteshed over the planning period.

Summary

Tables ES-2 and ES-3 present a summary of the expected disposition of each component of the ANSWERS Wasteshed solid waste stream for the year 1997.

SOLID WASTE PROCESSING/DISPOSAL TECHNOLOGY EVALUATION

The following approach was utilized to evaluate solid waste disposal technologies:

- A primary objective of the technology evaluation is to reduce the amount of solid waste which will require landfill disposal, regardless of the technology or group of technologies recommended in the GEIS/SWM Plan.

- The first step in solid waste processing/disposal is waste reduction, recycling and reuse, to the extent that economic markets are available. Waste reduction, recycling and reuse programs are an integral part of solid waste management in the ANSWERS Wasteshed.

- The second step is an analysis of the future role of ANSWERS, the existing solid waste processing/disposal system serving the ANSWERS Wasteshed.

- The technology evaluation will also focus on identifying technologies relevant to processing/disposal of the resultant waste stream, i.e., waste remaining after application of the recycling programs and ANSWERS.

Recycling

The New York State Solid Waste Management Plan identifies a goal of 50 percent (by weight) waste reduction, recycling and reuse of solid waste by 1997, including eight to ten percent from waste reduction. The proposed action includes Planning Unit support of State and federal legislative efforts on waste reduction and encourages conservation through public education programs designed to reduce the purchase of non-recyclable and non-reusable materials. The Planning Unit has developed a recycling program designed to assist the ANSWERS Wasteshed in meeting the State's goal of recycling and reusing 40 to 42 percent (by weight) of the solid waste stream. A three-phased plan is proposed in order to ensure that investments and resources are used in a cost-effective manner, that progress can be measured, and that additions and adjustments to the program can be carried out effectively.

Phase I of the Recycling Plan (January 1, 1989, through December 31, 1990) consists of the continuation and expansion of all existing recycling programs and activities for the residential and commercial (including institutional and non-hazardous industrial) sectors, as well as the

expansion of leaf and yard waste composting programs throughout the Wasteshed by the individual municipalities in the Planning Unit. Under Phase I, the Planning Unit will begin to develop mechanisms for involving the private sector in implementation of commercial recycling activities including (a) waste audits to further characterize the commercial waste stream; (b) source separation of recyclables by commercial establishments; (c) the development of private sector waste reduction and recycling programs; and (d) record-keeping and monitoring programs to coordinate private sector activities with the overall Planning Unit recycling goals. These efforts will allow for more accurate identification of the quantities and sources of the commercial waste stream, which is approximately 40 percent of the Wasteshed's generated waste. Household hazardous waste collection days, on which residents are requested to bring household hazardous wastes including used batteries to a designated collection site, are also planned for initiation during this phase.

Phase II of the Plan (January 1, 1991 through December 31, 1997) will be highlighted by the development and implementation of a MRF to serve all ANSWERS Wasteshed communities. Facility processes will include the baling of newspaper, corrugated cardboard and mixed paper, the crushing of glass, the magnetic separation and flattening of cans, and volume reduction, as appropriate, of HDPE and PET plastics. In addition, the Planning Unit will continue the efforts initiated under Phase I to foster the implementation of intensive commercial sector waste reduction and recycling programs throughout the Wasteshed. In general, Phase II includes programs for regional source separation of portions of the residential and commercial waste stream, and composting of portions of the wastewater treatment plant sludge, and leaf and yard waste components of the waste stream generated in the Wasteshed. In addition, existing recycling methods for white goods, tires and waste oil will continue, and be expanded where applicable. Current reuses of oil-soaked dirt, offal, power plant ash and discarded cars are expected to continue throughout the planning period. This phase also involves the establishment of mandatory source separation in accordance with Section 120-aa of the General Municipal Law.

Phase III (January 1, 1998, to December 31, 2000) will include the continuation and, where applicable, the expansion of existing recycling

activities and programs in all ANSWERS Wasteshed communities, for both the residential and commercial recycling sectors.

Assessment of the Future Role of ANSWERS

The GEIS/SWM Plan includes an evaluation of ANSWERS in terms of technical, environmental, contractual and economic considerations. Since ANSWERS is an existing system, a reasonableness standard is applied in the evaluation. The purpose of the evaluation is to determine if, at this time, any reasons exist which would preclude continuation of ANSWERS in its current role as a processing/disposal technology through, at least, the expiration of the ANSWERS contract in the year 2002, and potentially through the planning period (1994-2013). The following paragraphs summarize the four phases of the evaluation.

Technical Considerations - Both the ANSWERS RDF Plant and the OGS Steam Plant were found to be acceptable in terms of technical considerations, although the quantity of RDF processed and combusted has never met the contractual target of 183,000 tons per year. Both the City and State are committed to continuing, and even improving current operations at both facilities.

However, there have been periodic difficulties in processing RDF at the OGS Steam Plant and the OGS Steam Plant will need to be retrofitted to meet anticipated air emissions regulations. Although resolution of both of these issues is expected, nevertheless, they suggest that it is prudent to include a backup technology evaluation to identify a recommended technology to be implemented should the ANSWERS RDF Plant, for any reason, be unable to successfully process and market RDF.

Environmental Considerations - The ANSWERS facilities -- the RDF Plant and the OGS Steam Plant were assessed in terms of the following environmental factors:

- air quality;
- health effects;
- surface and ground water quality;
- noise;
- odors, vectors, litter, fugitive dust;
- explosions and fire;
- traffic; and

- regulatory compliance.

Based on the assessment performed, no environmental or regulatory issues have been identified that cannot be addressed or mitigated adequately, or are of sufficient seriousness to warrant any change in the current role of the ANSWERS project.

Contractual Considerations - The ANSWERS Contract entered into in 1982 and the supplemental agreement entered into in 1987 define the responsibilities of the City and the State in the ANSWERS project. Based upon a review of the contractual obligations presented in the agreements, it appears that the existing agreements adequately meet the current needs of the ANSWERS Wasteshed. Several issues which may need to be negotiated between the parties are also discussed. The major issue, related to the discussion present above under technical considerations, is that the City, in practice, does not appear to be protected from shortfalls in the amount of waste accepted by OGS. This situation contributed to the City's decision to include in the Plan provision for a backup technology.

Economic Considerations - The ANSWERS project is economically favorable for the ANSWERS Wasteshed when compared to available alternatives.

Summary of ANSWERS Assessment - The results of the assessment indicate that it is appropriate to continue to utilize ANSWERS in its current role. However, it is also recommended that the Plan include provision for a backup technology.

Complementary Technology Evaluation

The evaluation of technologies to address the remaining waste stream after application of the proposed recycling programs and continuation of ANSWERS, was conducted, considering the full spectrum of alternative technologies as grouped into these five categories:

- Material recovery systems;

- Biological recovery systems;
- Thermal recovery systems;
- Landfills; and
- Exportation.

An analysis of the remaining waste stream indicated that, if the recycling programs meet the goals targeted in the Recycling Program, and if ANSWERS continues to process 90,000 to 150,000 tons per year of RDF, the remaining waste stream will consist primarily of non-processible waste. Non-processible waste will not be reduced by biological or thermal recovery systems. Since the proposed action already provides for recycling of materials for which an economic market exists, the application of a materials recovery facility was determined to be inappropriate to the remaining waste stream. The only remaining alternative is landfill. An analysis of the benefits and risks of waste exportation versus development of a new landfill are discussed. The result of this analysis is a recommendation that the Planning Unit implement a new landfill for disposal of non-processible waste, bypass waste for ANSWERS, and OGS incinerator residue.

Backup Technology Evaluation

An analysis is presented which identifies a recommended backup technology for the ANSWERS Wasteshed. To provide needed input for the analysis, an investigation of potential energy markets was also performed.

Backup Energy Markets Identification - An investigation was performed to identify potential energy users in the ANSWERS Wasteshed: The markets investigated were:

- Refuse-Derived Fuel (RDF);
- Ash Residue;
- Steam and Hot Water; and
- Electric Power.

The energy markets investigation identified the following potential markets. Three potential RDF markets were identified -- Blue Circle

Atlantic, Independent Cement Corp., and Lydall-Manning Paper Company. One potential ash residue market was identified -- Colonie Block and Supply Company. No viable steam or hot water markets were found. Two potential electric power markets were identified -- Niagara Mohawk, and Central Hudson Gas & Electric.

Backup Technology Evaluation - The evaluation of technologies to address the waste stream remaining after application of the proposed recycling programs is presented, considering the full spectrum of alternative technologies as grouped into these five categories:

- Material recovery systems;
- Biological recovery systems;
- Thermal recovery systems;
- Landfills; and
- Exportation.

These technologies are analyzed by evaluating environmental, technical, economic, and siting criteria in a three-phased approach as follows:

Phase	Evaluates	For These Factors	and Identifies
1	Solid Waste Technologies	Technical & Environmental	Acceptable Technologies
2	Acceptable Technologies	Technical, Economic & Environmental	Preferred Technologies
3	Preferred Technologies	Environmental & Economic	Recommended Technologies

Figure ES-4 illustrates how the phased evaluation process was performed.

The following twelve technical and environmental factors are considered in Phase 1:

Technical Factors

- Commercial availability
- Successful U.S. operational history
- Compatibility with recycling
- Reliability
- Implementation time

Environmental Factors

- Air quality impacts
- Ground and surface water impacts
- Odors and vectors
- Landfill requirements
- Noise levels
- Traffic volume
- Aesthetics

Based on the application of these Phase 1 criteria, the following technologies are identified as acceptable backup technologies for the ANSWERS Wasteshed:

- Thermal Recovery System
  - Waste-to-Energy
    - Mass combustion field-erected
    - Mass combustion field-erected with preprocessing
    - Mass combustion modular
    - Mass combustion modular with preprocessing
  - RDF-to-Energy
    - Spreader stoker
- Landfill
  - New capacity

It should also be noted that the technologies which incorporate, to some degree, composting of the mixed solid waste stream are rapidly gaining prominence in terms of solid waste management planning. It is recommended that the Planning Unit continue to monitor projects including the composting of mixed solid waste and as appropriate, reassess these technologies in terms of the criteria presented herein.

Each of the acceptable backup technologies is evaluated further in Phase 2 with the following 15 technical, economic and environmental criteria:

Technical Factors

- Flexibility
- Redundancy
- Design complexity
- Operational complexity
- Safety record
- Warranties/guarantees
- Land area requirements

Economic Factors

- Material recovery revenue
- Energy recovery revenue
- Capital cost
- Operation and maintenance cost
- Net cost per ton of solid waste processed
- Financing

Environmental Factors

- Number and complexity of permits
- Regulatory agency support

Based on the application of these Phase 2 criteria, the following technologies are identified as preferred backup technologies for the ANSWERS Wasteshed:

- Thermal Recovery System
  - Waste-to-Energy
  - Mass combustion field-erected
  - Mass combustion field-erected with preprocessing
  - RDF-to-Energy
  - Spreader stoker

- Landfill
  - New capacity

Each of the preferred backup technologies is evaluated further in Phase 3 in terms of the potential environmental impacts and economics associated with each.

The results of the environmental analysis indicated that with proper design, construction, and operation, and implementation of mitigating measures, any of the preferred technologies is capable of providing an environmentally acceptable backup technology for the ANSWERS Wasteshed. None of the preferred technologies demonstrate a clearly superior choice based on environmental factors.

Life-cycle cost analyses were performed to compare the likely costs of implementing any of the preferred backup technologies in the ANSWERS Wasteshed. To perform these analysis, a hypothetical situation was constructed in which it was assumed that on July 1, 1991, the ANSWERS RDF Plant ceased to be able to successfully process and market RDF for some unidentified reason. Over the next year the Planning Unit would seek alternative RDF markets. The hypothetical analysis assumes that none are

found. A decision to implement a backup technology is made in 1992, and the evaluation presented herein is reassessed, with a backup technology chosen by the end of 1992. Under this scenario, a backup landfill could be operational in 1994. It is assumed that either a waste-to-energy facility or an RDF-to-energy facility would commence operations in the year 2000, assuming a seven-year implementation schedule for siting evaluations, environmental assessments, vendor procurement, energy contract negotiations, and facility design, construction, start-up and acceptance testing. This comfortable schedule, while not fast-tracked, is not unreasonable, and results in a lower average cost than a more accelerated schedule. The results of the life-cycle cost analysis indicate that over the planning period, the average life-cycle cost of the waste-to-energy alternative is approximately $112 per ton processed in 1990 dollars, the average life-cycle cost of the RDF-to-energy alternative (cost estimate assumes continuation of operation of ANSWERS RDF Plant also) is approximately $126 per ton processed in 1990 dollars, and the average life-cycle cost of the landfill alternative is approximately $78 per ton processed in 1990 dollars.

Based on the technology evaluation, the development of a new landfill is recommended as the backup technology for the ANSWERS Wasteshed solid waste management program. This selection is based on a number of factors, including:

- Landfilling is a proven, technically sound and environmentally acceptable solid waste disposal technology;

- Of all of the technologies considered, landfilling offers the maximum degree of flexibility in terms of quantity and characteristics of waste delivered. Because landfill operations can be readily adjusted to accommodate either increases or decreases in waste deliveries, this technology selection will allow the Planning Unit and others the greatest latitude for aggressive implementation of a wide range of recycling programs;

- Development of a landfill involves a relatively low initial capital investment, in comparison with other solid waste technologies; and

- The development of a new landfill offers a much lower estimated cost than the other preferred technologies identified for the ANSWERS Wasteshed communities.

It should be noted that the solid waste industry is a rapidly changing one, in which the range of available technologies and the

demonstrated records of technologies in terms of technical achievement, environmental impacts, regulatory compliance and system economics also reflect significant changes in relatively short periods of time. Therefore, the analyses presented in the GEIS/SWM Plan, although appropriate for the present (1989), may need to be revisited based on changes in the solid waste industry, when and if it is applied.

In particular, the Planning Unit intends to continue to monitor the progress of MSW composting projects and to reevaluate MSW composting technologies prior to any implementation of a backup technology. A number of recently planned/implemented MSW composting projects show promise for improving the proven reliability of this technology. Such an assessment will also address composting markets available to the ANSWERS Wasteshed.

ENVIRONMENTAL SETTING

The Planning Unit includes approximately 483 square miles in east-central New York near the confluence of the Mohawk and Hudson Rivers. The Helderberg Escarpment, which tends northwest to southeast, divides the Planning Unit into two distinct topographic areas. West of the Escarpment, the topography is deeply dissected and forms a portion of the Appalachian Plateau Physiographic Province. East of the Escarpment, the topography is relatively flat. This area forms a portion of the Hudson-Mohawk Lowlands Physiographic Province.

The geology of the Planning Unit is characterized by relatively thin glacial till over shale bedrock west of the Escarpment. East of the Escarpment, thicker glacial deposits, commonly lake deposits, overlie the bedrock. Also, east of the Escarpment, pre-glacial erosional channels are present in the bedrock. Significant surface water bodies include the Hudson River, Mohawk River and several drinking water supply reservoirs. In addition to these reservoirs, unconsolidated glacial deposits provide a major source of municipal water. Bedrock generally provides relatively low yields.

Over 100 freshwater wetlands occur throughout the ANSWERS Wasteshed. Portions of eight streams are classified as trout streams. The NYSDEC has designated 36 areas in the ANSWERS Wasteshed as significant habitats for wildlife.

The climate of the ANSWERS Wasteshed is characterized as humid continental. The area experiences mild, comfortable summers with cold, and sometimes fairly severe winters. The Wasteshed forms a portion of the Hudson Valley Air Quality Control Region and is currently within the regulatory limits for all criteria pollutants.

The 1988 estimated population of the ANSWERS Wasteshed is approximately 281,000. Major population centers are the City of Albany and associated suburbs, and the Cities of Schenectady and Rensselaer. These densely populated areas are located in the northern and eastern portions of the Wasteshed. The Wasteshed is well served by air, rail, road and water transportation.

SITING APPROACH AND CRITERIA

A three-phased approach is presented to identify potential sites for solid waste management facilities to serve the Planning Unit. The types of facilities which are considered for siting as part of the GEIS/SWM Plan are recycling facilities and landfills. In the siting approach outlined, in each succeeding phase, a more detailed evaluation will occur as the number of potentially available area identified for siting decreases. The three phases of the siting approach are:

- Phase 1. Exclusionary Phase;
- Phase 2. Preferred Area Identification Phase; and
- Phase 3. Evaluation/Recommendation Phase.

Table ES-4 presents the proposed criteria for each phase.

Phase 1, the Exclusionary Phase, will include the application of exclusionary criteria to a base map of the Planning Unit. The exclusionary criteria are primarily environmental and regulatory in nature and result in the exclusion of environmentally sensitive areas as well as areas considered undesirable for particular categories of solid waste management facilities. The remaining areas constitute areas considered as potentially available for siting. These potentially available areas will be subjected to further study during Phase 2, the Preferred Area Identification Phase. However, if the application of exclusionary criteria results in the identification of too limited a number of potential sites, it may be necessary to consider (a) modifying the

exclusionary criteria or (b) modifying the technology selection process presented in Section 5 of this GEIS/SWM Plan.

The objective of Phase 2, the Preferred Area Identification Phase, is to select, for each category of solid waste management facility considered, potential sites from the field of potentially available areas identified in Phase 1. This will be accomplished by the application of preferred criteria to areas that are identified as potentially available by the results of Phase 1. Preferred criteria are used to identify sites with characteristics which are the most desirable for siting a particular type of solid waste management facility. Areas which are not selected by the application of the preferred criteria are not to be necessarily eliminated from further consideration. If application of preferred criteria results in the identification of too limited a number of potentially suitable sites, the proposed criteria may be modified to allow further consideration of a larger number of sites.

The areas remaining after Phase 2 screening will be evaluated during Phase 3, the Evaluation/Recommendation Phases, based on a set of evaluation criteria.

Based on the results of Phase 3, a recommendation will be made identifying sites to be considered for further, more detailed evaluation (e.g., limited hydrogeological and/or geotechnical investigations, traffic studies and biological inventory). Sites which are not recommended for further study are not permanently eliminated. All sites reaching Phase 3 of the siting analysis will have met the exclusionary and preferred criteria for the type of facility under consideration. As necessary, these sites can be further evaluated should the sites recommended for further study prove to be either inaccessible for further study or use, or otherwise unsuitable for development.

Volunteer Sites

As part of the August 30, 1989, public meeting on siting of solid waste facilities, the issue of volunteer sites and the solicitation of volunteer sites was raised. To date, no sites have been volunteered to the Planning Unit. This section discusses the methodology proposed for evaluating a volunteered site. A site may be volunteered by a person or

entity who either owns the site or has the ability to acquire and convey the site.

To be considered as a potential landfill site, a volunteered site must meet all of the Phase 1, Exclusionary Criteria and all of the regulatory requirements applicable to siting. Any volunteered site which met all of the Phase 1 - Exclusionary Criteria as well as all of the regulatory requirements for siting a landfill, would be included in Phase 3, the Evaluation/Recommendation phase of the siting analysis. The relative merit of any volunteered site reaching Phase 3 of the siting evaluation would be assessed in Phase 3.

Attachment 1 to this Executive Summary includes (a) a detailed description of each of the siting criteria presented in Table ES-4 and (b) an example of how the siting criteria is intended to be applied to the Wasteshed to identify potential landfill sites.

EVALUATION OF TRANSFER STATION NEEDS

An evaluation is presented addressing the feasibility of developing a "regional" transfer station in the ANSWERS Wasteshed, to serve the western and southern municipalities served by ANSWERS.

Major technical, economic, environmental and permitting considerations associated with development of a transfer station are presented.

An economic analysis has been performed on the development of an approximately 125 tpd transfer station operating five days per week in one of the following locations:

- the Town of New Scotland, or
- the Town of Bethlehem.

The municipalities assumed to be served by the transfer station are the Towns of Berne, Bethlehem, Coeymans, Knox, New Scotland, Rensselaerville and Westerlo. The economic analysis compared an estimate of the current cost of transportation of residential and commercial waste to the ANSWERS scale house, with an estimate of the potential cost for transport of all residential and commercial waste generated in these municipalities to a "regional" transfer station, with subsequent transport via large transfer vehicles to the ANSWERS scale house.

The results of the economic evaluation indicate that it would be more expensive to implement a "regional" transfer system than to continue with the existing transportation methods (including individual municipal transfer stations).

At this time, it does not appear economically justified to develop a "regional" transfer station to serve the Planning Unit.

ENVIRONMENTAL IMPACTS

Potential environmental impacts associated with the implementation of the proposed solid waste management facilities are described in Section 9.0 of the GEIS/SWM Plan, and include:

- Air quality;
- Health Effects;
- Surface and Ground Water Quality;
- Odors, Vectors, Litter, Fugitive Dust (Nuisance Impacts);
- Explosions and Fire;
- Traffic;
- Land Use and Aesthetics; and
- Ecological resources.

Additional environmental review to be conducted in connection with implementation of this GEIS/SWM Plan will evaluate these impacts in more detail.

IMPLEMENTATION APPROACH

The implementation of a solid waste management program involves a number of institutional issues in addition to technical considerations, including:

- Solid waste stream flow control
  - Waste deliveries to the ANSWERS RDF Plant
  - Source-separated recyclables deliveries to the MRF
  - Individual Municipality Responsibilities
    - Recycling programs for leaf and yard waste to conform with Planning Unit goals as presented in the Recycling Plan
    - Recycling programs for construction and demolition debris to conform with Planning Unit goals presented in the Recycling Plan
    - Disposal of unrecycled leaf and yard waste
    - Disposal of unrecycled construction and demolition debris

  - Monitoring and recordkeeping of municipality recycling/reuse quantities/programs
- Facility procurement
- Facility ownership
- Financing and funding assistance

Control over the waste stream is necessary to ensure that it will be delivered to the appropriate processing or disposal facility. Contractual, legislative, and economic methods are typically available for obtaining such control. The financial community typically requires not only "put-or-pay" provisions, which identify the payment obligation, but also the establishment of a legal authority to control the waste. These needs often cause communities to combine contractual and legislative control of the solid waste stream, an approach being pursued by the Planning Unit.

In 1989, legislation was introduced in the New York State Legislature which would create an ANSWERS Wasteshed Solid Waste Management Authority. This legislation has been endorsed by the members of the Planning Unit, each of which will have the option of electing to become participants in the Authority. However, this legislation was not passed prior to the close of the legislative session. It is expected that this legislation will be reintroduced at the commencement of the next legislative session. The creation of an authority would centralize much of the decision-making regarding solid waste management for the ANSWERS Wasteshed in one body.

Facility Procurement

Facility procurement typically involves one of these procurement methods:

- Conventional architect/engineer (A/E);
- Turnkey; and
- Full service.

Each of these methods involves different approaches and therefore different risks. The conventional architect/engineer approach involves formal bids and the award of the contract to the lowest bidder. Typically, an architect/engineering firm prepares the design and bid documents, contractors bid on the construction of the project, and the operation of the facility is performed by the municipal entity or another private contractor. In a turnkey procurement, one contractor is responsible for design, construction, and testing of the facility, with

operation the responsibility of the municipal entity. A full-service procurement places the responsibility for design, construction, and operation on one contractor.

A full-service procurement approach can be utilized with either public or private ownership of the facility. While private ownership has historically been utilized for related economic benefits to pass back to the municipality, recent changes to the tax code, notably the 1986 Tax Reform Act, have significantly reduced these advantages. Since the community has the ultimate responsibility for disposal of the solid waste, many communities now considering full-service procurement opt for public ownership, to retain a greater degree of control over the facility.

Regardless of the approach selected, the procurement of solid waste management facilities in New York State is regulated by either General Municipal Law Section 101 and 103 or Section 120-w.

The Planning Unit is at this time expecting to procure the proposed MRF as a full-service project, and to procure the long-term landfill by the A/E procurement method.

Facility Ownership

The selection of ownership (public vs. private) should take into account the control over the project, the allocation of risks, and the economic benefits associated with each approach. Public ownership offers a greater degree of control, which is important in long-term projects that address significant environmental issues and involve substantial capital and operating expenditures. Private ownership allocates more of the operating risks to the private vendor, but the community will continue to have the ultimate responsibility for disposal of its solid waste should the vendor be unable to fulfill its obligations. In addition, the economic considerations of ownership should be addressed (i.e., equity contribution from a private owner vs. municipal ownership of the facility after retirement of a bond issue or other project debt). The Planning Unit at this time intends to pursue public ownership of the proposed MRF and the landfill.

Financing and Funding

The construction and operation of solid waste management facilities involves substantial capital expenditures and operating budgets. Generally such facilities can be financed from public sources, private sources, or a combination thereof. Financing sources for solid waste management facilities include:

- General Obligation bonds;
- Industrial Development bonds;
- Municipal Revenue bonds;
- Leveraged Leasing; and
- Private Equity.

These sources can be used alone or in combination to provide the necessary financing to implement the Planning Unit's solid waste management program. A specific financing plan should be developed as part of the implementation of the ANSWERS Wasteshed solid waste management program.

MITIGATION MEASURES

This draft GEIS/SWM Plan identifies recommended technologies and an approach and criteria for selecting sites for the proposed technologies, and presents generic mitigation measures which will be detailed and developed in the site- and technology-specific environmental review process. The following is an overview of mitigation measures which could be implemented to reduce or eliminate impacts associated with the proposed technologies: a MRF; a long-term landfill for disposal of non-processible waste, bypass waste from ANSWERS and OGS incinerator residue; and, if needed, a backup technology, a landfill for disposal of all unrecycled solid waste managed by the Planning Unit.

Air Quality

State-of-the-art methods for reducing emissions such as fugitive dust and controlling releases of landfill gases would be included in the design of the proposed technologies to meet the requirements of applicable regulations.

Water Quality

Impacts on the quality and/or quantity of surface and ground water from the construction and operation of solid waste management facilities are expected to be low. Regulatory requirements related to site selection, and controls mandated for facility construction and operation result in a minimization of potential impacts. Areas to be addressed would include soil erosion controls; drainage patterns; water supply sources and requirements; wastewater collection, treatment, and disposal; and storm water control.

Noise

There are a number of methods to control or reduce noise associated with construction and operation of solid waste management facilities, including vibration reduction, enclosure of the noise source, and absorption of sound by natural and/or man-made barriers. Noise can also be controlled by regular maintenance of equipment and the use of sound bafflers such as mufflers on mobile equipment. Scheduled hours for the acceptance of solid waste deliveries can also reduce noise impacts on residential areas.

Household Hazardous Waste Control

The solid waste management program can mitigate household hazardous waste through public education, household hazardous waste collection and disposal, and operator training. Although removal of hazardous household wastes from the waste stream will be emphasized prior to delivery to the solid waste management facilities, operators there should be trained to identify and remove any suspicious or unacceptable materials.

Loss of Habitat

Habitat loss will depend upon site development and the types of ecological communities present on the site. In the event that valuable habitat were to be significantly impacted or lost through project development, a compensating mitigation plan would be developed.

Traffic

Traffic impacts will be a function of the site selected for development, and subsequent studies would determine any necessary mitigation measures.

Aesthetics

Mitigation measures for aesthetics are also site-specific and would be addressed in a site- and technology-specific environmental assessment. Such measures typically involve the use of buffer, vegetation, and topography to minimize the visual impact of the facilities.

Land Use

While land use mitigation is also a function of the selected sites, precautions such as the development of appropriate siting criteria should be implemented to create compatible land use.

UNAVOIDABLE ENVIRONMENTAL IMPACTS

Based on the impacts described in Section 9 and the mitigation measures described in Section 11 of the GEIS/SWM Plan, the action as proposed would substantially eliminate potential adverse environmental impacts associated with continuing the existing landfills which are under consent order to close. Unavoidable adverse impacts may include increased traffic at the selected sites, engine exhaust fumes during construction and operation of the facilities, noise, fugitive dust, landfill gas generation, aesthetic impacts, soil erosion, and potentially impacts on ecological resources. Additionally, reusable materials and possibly energy would be recovered from solid waste through the proposed recycling facility. The local area will also realize direct and indirect benefits of increased employment from sales and income gains, and other positive effects.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed development would consume or otherwise render unavailable for future use certain natural and man-made resources.

Resources expended in the implementation of the MRF and landfill facilities as well as the backup technology, if appropriate, would include land utilized for site development and energy, materials and financial resources. The proposed action would also potentially use air and water quality resources.

GROWTH INDUCING ASPECTS

The growth of the ANSWERS Wasteshed is not limited by the existing waste disposal infrastructure. The development of the MRF and long-term landfill, as well as continuation of ANSWERS are not expected to have any direct growth inducing aspects. However, implementation of the proposed action will provide for the necessary service of solid waste reduction, recycling, reuse, processing and disposal.

USE AND CONSERVATION OF ENERGY

The recommended Plan includes the development of two new facilities -- a MRF and a long-term landfill -- to complement the existing ANSWERS project. Energy will be consumed by construction and operation of the proposed facilities. Once the MRF becomes operational, resources in the form of recyclables will be conserved, and in some cases, this conservation will result in conservation of energy that would otherwise have been consumed in the production of new materials. In addition, it may be possible to reclaim energy from gases generated by decomposition of solid waste in the long-term landfill.

REGULATORY REQUIREMENTS

The proposed action must comply with all applicable federal, State, county, and local environmental laws and regulations. Table ES-5 lists the major permits, certifications, and reviews that may be required. Permits under 6 NYCRR Part 360 will also be required for the construction and operation of the solid waste management facilities.

TABLE ES-4

ALBANY GEIS/SWM PLAN

SOLID WASTE MANAGEMENT FACILITY SITING CRITERIA

PHASE	CRITERION	RECYCLING	LANDFILL
Exclusionary Phase	- Agricultural Districts with soil groups 1 & 2	X	X
	- Surface Water/ Regulated Wetlands	X	X
	- Floodplains	X	X
	- Endangered/Threatened Species	X	X
	- Primary Water Supplies/ Principal Aquifers		X
	- Community Water Systems		X
	- Depth to Bedrock ≤ 10 Feet		X
	- Potential Karst		X
	- Slopes ≥ 15%	X	X
	- Parks & Preserves	X	X
	- Urban/Suburban	X	X
	- Airports		X
Preferred Area Identification	- Preferred Acreage/ Configuration	X	X
	- Clay/Silt/ Till Soil		X
	- Industrial/Heavy Commercial Areas	X	X
	- Adjacent to ANSWERS (Rapp Road) Site	X	
Evaluation Criteria	- Population Density	X	X

TABLE ES-4

ALBANY GEIS/SWM PLAN

SOLID WASTE MANAGEMENT FACILITY SITING CRITERIA
(Continued)

PHASE	CRITERION	RECYCLING	LANDFILL
Evaluation Criteria (continued)	- Local Land Use	X	X
	- Geology		X
	- Environmental Setting	X	X
	- Site Life		X
	- Transportation Routes/ Site Access	X	X
	- Incompatible Structures	X	X
	- Utility Lines/ Rights-of-Way	X	X
	- Emergency Services	X	X
	- Air Quality/Visual Effects	X	X
	- Cultural Resources	X	X
	- Agricultural Land	X	X
	- Distance From Waste Centroid	X	X
	- Ease of Acquisition	X	X
	- Reservoir Drainage Basin		X
	- Availability of Utilities	X	X
	- Co-Location Potential	X	X

TABLE ES-A3

HYPOTHETICAL LANDFILL SITE COMPARISON: EVALUATION CRITERIA SUMMARY

	Site					
	A*	B*	C	D*	E*	F
Primary Criteria						
Population Density	H	L	M	M	M	M
Local Land Use	H	M	L	M	L	M
Geology	M	H	L	H	M	L
Environmental Setting	M	M	H	M	M	L
Site Life	H	M	L	M	M	M
Secondary Criteria						
Transportation Routes/Site Assess	M	H	M	M	L	M
Incompatible Structures	M	H	M	M	H	L
Utility Lines/Rights-Of-Way	M	M	H	M	L	L
Emergency Services	H	M	L	M	L	H
Air Quality/Visual Effects	L	L	M	H	M	M
Cultural Resources	M	M	H	L	M	L
Agricultural Land	M	H	L	M	M	M
Distance from Waste Centroid	L	M	M	H	M	H
Ease of Acquisition	H	L	M	H	M	M
Reservoir Drainage Basin	H	H	H	L	H	L
Availability of Utilities	M	M	L	L	H	M
Co-Location Potential	H	M	L	H	H	H

*Potential landfill sites recommended for further study.

H = High
M = Medium
L = Low

TABLE ES-A2

HYPOTHETICAL LANDFILL SITE COMPARISON: ENVIRONMENTAL SETTING

	Site					
	A	B	C	D	E	F
Characterization	M	M	H	M	M	L

H = High
M = Medium
L = Low

TABLE ES-A1

HYPOTHETICAL LANDFILL SITE COMPARISON: DISTANCE FROM WASTE CENTROID

	Site					
	A	B	C	D	E	F
Distance (miles)	22	14	12	4	14	6
Characterization	L	M	M	H	M	H

ATTACHMENT 1 TO THE EXECUTIVE SUMMARY

A. Detailed Description of Siting Criteria

1. Phase 1, Exclusionary Phase - Criteria

This section describes the criteria for the Phase 1 - Exclusionary Phase of the siting evaluation. It should be noted that the sources listed herein may be supplemented by updated versions of the same documents, or, if practicable, additional, more detailed information made available to the Planning Unit by individual landowners or other entities.

All solid waste management facilities are prohibited in certain areas as defined in 6 NYCRR Part 360-1.14(b) and (c). The criteria which screen out areas which are prohibited for all solid waste management facilities are the following:

CRITERION:	Agricultural Districts
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR Part 360-1.14(c)(1). Prohibits siting of a solid waste management facility in an area which (a) consists predominantly of agricultural soil groups 1 or 2, and (b) is within an agricultural district and (c) is taken by eminent domain. This siting prohibition does not apply to land application and composting facilities. For solid waste management facilities considered herein, it is assumed that such land would be acquired by eminent domain. Therefore, soil groups 1 and 2 within Agricultural Districts will be mapped as prohibited areas.
Sources:	USDA, Soil Conservation Service, Albany County Office. Agricultural District Maps, 1974, Scale 1:24,000. General soil map and interpretations, Albany County, New York. USDA, Soil Conservation Service, 1974, 76 pp, 1 sheet, Scale 1:62,500.
CRITERION:	Surface Water and Regulated Wetlands
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR Part 360-1.14(b)(1) prohibits the deposition of solid waste in surface waters. 6 NYCRR Part 360-1.14(c)(4) prohibits solid waste

management facilities from being located in a regulated wetland.

Sources: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000, with Regulated Wetlands Mapped by the New York State Department of Environmental Conservation.

CRITERION: Floodplains

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-1.14(c)(2) and 360-2.12(e)(3) prohibit siting of a solid waste management facility in a floodplain. Floodplain mapping is currently available for all communities within the ANSWERS Wasteshed with the exception of the Town of Westerlo. The possible existence of floodplains in any candidate areas identified in the Town of Westerlo will be specifically addressed during Phase 3, the Evaluation/Recommendation Phase.

Sources: Federal Emergency Management Agency and Housing and Urban Development. Flood Insurance Rate Maps.

CRITERION: Endangered or Threatened Species

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-1.14(c)(3) prohibits the construction or operation of solid waste management facilities which take endangered or threatened species or adversely affect their critical habitat. This is a difficult criterion to map. For this reason, although this is an exclusionary criterion, it will be applied to candidate areas remaining for evaluation in Phase 3.

Source: NYSDEC, New York Natural Heritage Program, Rare Plants, Animals, and Natural Communities Computer Listing, April 27, 1989.

In addition to the areas in which all solid waste management facilities are prohibited by 6 NYCRR part 360-1.14(b) and (c), landfills are specifically restricted from further areas by 6 NYCRR Part 360-2.12(c). The restricted areas for landfill siting as defined by 6 NYCRR Part 360 have been supplemented herein by the inclusion of additional restrictive criteria for recycling facilities and landfills. These restrictions and the basis for their inclusion as exclusionary criteria are discussed below.

CRITERION: Primary Water Supplies and Principal Aquifers

Facility Category: Landfill

Basis: 6 NYCRR Part 360-2.12(c)(1)(i) prohibits siting landfills over primary water supply aquifers or principal aquifers. Two sources are available for information on primary water supply aquifers and principal aquifers -- Bugliosi, et al., and Kantrowitz and Snavely. Bugliosi, et al., which delineates unconsolidated aquifers, is a more recent, more detailed and larger scale map than the Kantrowitz and Snavely map of unconsolidated aquifers. Based on discussions with NYSDEC staff it was concluded that Bugliosi, et al., represents the more appropriate basis for screening. More area-specific evaluation of soils occurs in Phase 2, the Preferred Area Identification Phase. Bugliosi, et al., also delineates aquifers of "unknown potential". These areas would be considered a principal aquifer by the NYSDEC unless investigation indicated otherwise (Lister, NYSDEC, 1989). Therefore, for the purposes of this siting effort, these areas will be considered to be principal aquifers.

Kantrowitz and Snavely is the only available source for information on bedrock aquifers. The area underlain by the Helderberg Group, Oriskany Formation, and the Onondaga Limestone comprises the bedrock principal aquifer.

In order to eliminate primary water supplies and any potential principal aquifers, any unconsolidated deposits delineated by Bugliosi, et al., and bedrock aquifers identified by Kantrowitz and Snavely will be eliminated.

Sources: Bugliosi, E.F., et al., 1988, Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Hudson-Mohawk Sheet, U.S. Geological Survey Water - Resources Investigations Report 87-4275, 1 sheet, Scale 1:250,000.

Kantrowitz, I.H. and Snavely, D.S., 1982, Availability of Ground Water from Aquifers in Upstate New York: U.S. Geological Survey Open-File Report 82-437, 2 sheets, Scale 1:750,000.

Lister, J., 1989, NYSDEC, Personal Communication, April 28.

CRITERION:	Community Water Systems
Facility Category:	Landfill
Basis:	6 NYCRR Part 360-2.12(c)(1)(iii) prohibits siting a landfill within a public water supply wellhead area. "Public water supply wellhead area" is defined in 6 NYCRR Part 360-1.2(b)(114) as "the surface and subsurface area between a public water supply well or wellfield and the 99 percent theoretical maximum extent of the stabilized cone of depression of that well or wellfield considering all flow system boundaries and seasonal fluctuations." Municipal and non-municipal community water supply sources, both surface and ground water, have been identified. While a wellhead can be mapped with little difficulty, the "wellhead area" is specific for each well or wellfield and is not generally available information. The extent of the "wellhead area" is dependent upon the type of well construction, pumping rate, pumping duration, and source aquifer characteristics. The "wellhead area" is typically defined by conducting a pumping test and evaluating the change in water levels in the pumping well and nearby observation wells. The approach used in this siting process will be to map available information (wellhead locations) during the Phase 1, Exclusionary Phase. This will exclude areas directly adjacent to public water supply wellheads. During Phase 3, the Evaluation/ Recommendation Phase, any public water supply wellheads within 5,000 feet of a potential site will be identified. The effect of the presence of the public water supply on the suitability of the potential site will be further investigated subsequent to the draft GEIS/SWM Plan Preparation during any hydrogeologic site specific study of potential sites.
Sources:	New York State Atlas of Community Water Systems, 1982. NYSDOH, Inventory - Community Water Systems, 1984.
CRITERION:	Depth to Bedrock
Facility Category:	Landfill
Basis:	6 NYCRR Part 360-2.13 (a)(2)(e) requires a minimum ten-foot vertical separation between the base of

the constructed liner and bedrock. In addition 6 NYCRR Part 360-2.12(c)(5)(d)(1) and (2) indicate that areas with thick overburden should be preferred in siting.

Bedrock at depths of less than 40 inches has been mapped for Albany County by the Soil Conservation Service. Information on depth to bedrock for a portion of the County has been supplemented by Fickies and Regan (1982). This information is in a format which will allow it to be transferred to maps and will, therefore, be used during the Phase 1, Exclusionary Phase. Additional information on depth to bedrock is available from the New York State Geological Survey in the form of hand-drafted surficial geology maps. Bedrock outcrops and areas where glacial deposits are less than ten feet thick are indicated on these maps. However, due to the detail of these maps and the complex interfingering of some glacial deposits it is not practical to transfer the complex information to a map of the Planning Unit for use in Phase 1, Exclusionary Phase. Therefore, the surficial geology maps will be used to characterize potential areas remaining after the application of Phase 2, Preferred Area Identification Phase. Potential areas which the surficial geology maps indicate are underlain by shallow bedrock will be excluded.

Sources:

General soil map and interpretations, Albany County, New York. USDA, Soil Conservation Service, 1974, 76 pp, 1 sheet, Scale 1:62,500.

Fickies, R.H. and Regan, P.T., 1982, Engineering Geology Classification of the Soils of the Albany, New York 15 Minute Quadrangle, New York State Museum Map and Chart Series, No. 36, Scale 1:24,000.

Dineen, R.J., 1982, Surficial Geology Mapping on U.S. Geological Survey, 7-1/2 Minute Quadrangles, Various Dates, Scale 1:24,000, New York State Geological Survey.

CRITERION: Potential Karst

Facility Category: Landfill

Basis: 6 NYCRR Part 360-2.12(c)(4) and (5) prohibits siting of landfills in unstable areas and unmonitorable or unremediable areas. Karst

features are formed over limestone or dolomite bedrock and are characterized by sinkholes, caves, and solution-enlarged fractures. Ground water flow in karst areas is commonly complex and difficult to predict. These features contribute to making a site for any solid waste management facility which disposes or treats solid waste on the ground surface potentially unstable, unmonitorable or unremediable.

Source: Fickies, R.H. and Regan, P.T., 1982, Engineering Geology Classification of the Soils of the Albany, New York 15 Minute Quadrangle, New York State Museum Map and Chart Series, No. 36, Scale 1:24,000.

CRITERION: Slopes of Greater than or Equal to 15 Percent and Potentially Unstable Slopes

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-2.12 (c)(4) prohibits siting landfills in unstable areas. This criterion is intended to exclude areas where steep slopes are a predominant topographic feature. Under certain conditions slopes can become unstable and fail either gradually or suddenly. One component of a slope's susceptibility to failure is its degree of slope. In addition, topography in which steep slopes predominate is less suited to landfill construction than relatively flat terrain. Areas in which steep slopes predominate are also unsuitable for other types of solid waste management facilities. However, it is possible to design and construct a landfill or other solid waste management facility in an area where a small area of steep slopes exists. For a portion of Albany County, Fickies and Regan have delineated areas which contain potentially unstable slopes. For the entire County, slopes equal to or greater than 15 percent will be mapped from NYSDOT 7-1/2 Minute Quadrangle Maps. Both sources of information will be used for the Phase 1, Exclusionary Phase.

Sources: Fickies, R.H. and Regan, P.T., 1982, Engineering Geology Classification of the Soils of the Albany, New York 15 Minute Quadrangle, New York State Museum Map and Chart Series, No. 36, Scale 1:24,000.

NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

CRITERION: Parks and Preserves

Facility Categories: Recycling and Landfill

Basis: Parks and preserves will be excluded from consideration for all solid waste management facilities in order to promote the preservation of open space. 6 NYCRR Part 360-2.12(e)(8) requires evaluation of proximity to open space when siting a landfill. Public parks, recreational areas and Nature Conservancy holdings will be included in this exclusion.

Sources: Albany County Planning Department, Environmental Management Council, Map of Open Space for Albany County.

NYSDOT, Albany and Schenectady Counties, 1989, 1 Sheet, Scale 1:75,000.

CRITERION: Urban/Suburban Areas

Facility Category: Landfill

Basis: 6 NYCRR Part 360-2.12(e)(1) requires evaluation of population density when siting a landfill. Densely developed and populated areas will be excluded from consideration by delineating areas indicated on 7-1/2 minute quadrangle maps as urban.

Source: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

CRITERION: Airports

Facility Category: Landfill

Basis: 6 NYCRR Part 360-2.12 (c)(3) prohibits locating a landfill which accepts putrescible waste within

5,000 feet of a public-use airport runway used by piston-type aircraft or within 10,000 feet of a public-use airport runway used by turbojet aircraft. Public-use airport runway locations and appropriate set back distances will be identified. Potential sites near small airports will be considered further in Phase 3.

Source: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

2. Phase 2, Preferred Area Identification Phase - Criteria

This section presents the criteria for the Phase 2 - Preferred Area Identification Phase of the siting evaluation. It should be noted that the sources listed herein may be supplemented by updated versions of the same documents, or, if practicable, additional, more detailed information made available to the Planning Unit by individual landowners or other entities.

CRITERION: Preferred Acreage/Configuration

Facility Categories: Recycling and Landfill

Basis: This criterion will establish a preferred area for each specific technology. In addition, it is considered prudent, if feasible, to add an additional acreage requirement as a contingency in the event that a selected site contains some limitations to development not identified during the preliminary evaluation. While many major limitations should be excluded in the Phase 1, Exclusionary Phase, further obstacles may be revealed during the succeeding, more detailed evaluations and studies. These limitations may include biologic or geotechnical factors, public roads, utility lines or archaeologic/historic resources.

Preferred acreage for Recycling will be based on size requirements at similar facilities having approximately the same facility capacity.

The minimum acreage for a landfill will be determined for the area on which solid waste will be deposited plus associated structures and buffer area. It is estimated that approximately 100 to 130 acres of total fill area will be required under the recommended Plan. Minimum acreage requirements and the total site size required including buffer

and administration areas will be dependent upon the number of sites to be utilized and the configuration of the potential sites.

CRITERION: Areas Characterized by Lake Clay and Silt or Till

Facility Category: Landfill

Basis: Siting of landfills in low permeability soils is preferred due to the lower potential for contaminant migration and the potential to utilize on-site soils for components of the landfill liner and cover. The preference for these soil types is indicated in 6 NYCRR Part 360-2.12(d)(1). The New York State Geological Survey has mapped the surficial geology within the ANSWERS Wasteshed. Two of the surficial geology deposits, lake clay and silt and glacial till, commonly contain large clay or silt components, and will be considered preferred areas.

The New York State Geological Survey has compiled subsurface data, from sources such as water well and soil boring logs, and mapped the glacial, or surficial, geology within the ANSWERS Wasteshed.

Source: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000, with Surficial Geology Mapping by Robert Dineen, New York State Geological Survey.

NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000, with Subsurface Data Point Mapping by Robert Dineen, New York State Geological Survey, Open Files.

CRITERION: Industrial or Heavy Commercial Area

Facility Categories: Recycling and Landfill

Basis: The purpose of this criterion is to site a solid waste management facility in an area which is compatible with the industrial nature of solid waste facilities. Areas which are currently industrial or planned industrial, i.e., zoned industrial or heavy commercial, are preferred for siting a solid-waste management facility. In areas where applicable zoning regulations do not exist, existing and/or planned land use will be used to determine the "industrial" or "heavy commercial" character of the area.

Sources: Zoning Maps from Various Municipalities.

CRITERION: Adjacent to ANSWERS

Facility Category: Recycling

Basis: The development of a recycling facility adjacent to the ANSWERS RDF Plant on Rapp Road in the City of Albany would offer the following advantages:

- The recycling facility would be compatible with existing and/or adjacent land use
- Historical use of the area is the operation of solid waste facilities
- Solid waste vehicles could travel along established routes.

Therefore, this location has been identified as a preferred area for a recycling facility.

However, it should be noted that the potential environmental impacts of locating a recycling facility adjacent to the ANSWERS RDF Plant have not yet been evaluated.

3. Phase 3, Evaluation/Recommendation Phase - Criteria

This section presents the criteria for the Phase 3 - Evaluation/ Recommendation Phase of the siting evaluation. It should be noted that the sources listed herein may be supplemented by updated versions of the same documents, or, if practicable, additional, more detailed information made available to the Planning Unit by individual landowners or other entities.

CRITERION: Population Density in the Vicinity of the Site (Population Density)

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-2.12(e)(1) requires population density to be considered when evaluating potential landfill sites. Population density will also be evaluated for recycling facilities. The number of residences within 1,000 feet and within 2,000 feet of the preliminary site outline of a proposed site will be tabulated. Any residences within the

preliminarily delineated outline of a proposed site will also be noted.

Sources: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

Site drive-by.

CRITERION: Local Land Use

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-2.12(e)(5) requires consideration of local land use planning and zoning restrictions when evaluating potential landfill sites. Local land use will also be evaluated for recycling facilities. The intent of this criterion is to consider zoning and land use plans of each candidate area, and to assess the compatibility of facility development with zoning and land use plans. In this respect, zoning is considered a planning tool, not a legal restriction on development. For areas where no zoning exists, current land use will be used in lieu of adopted zoning regulations.

Sources: Municipal Zoning and Land Use Plans.

Site drive-by.

CRITERION: Geology

Facility Category: Landfill

Basis: Geologic information will have been used in screening potential landfill sites during Phases 1 and 2. Due to the importance of geology in affecting a potential landfill site's suitability, geology will be considered again during Phase 3. Geologic information specific to a potential site will be described. This will include available information from geologic maps, publications, and water well logs. Site characteristics such as depth to bedrock, presence of faults, glacial deposits and geomorphology will be described and compared among potential sites. With the exception of a site drive-by, no field investigations will be performed.

Sources: Dineen , R.J., 1982, Surficial Geology Mapping on U.S. Geological Survey, 7-1/2 Minute Quadrangles,

Various Dates, Scale 1:24,000, New York State Geological Survey.

Site drive-by.

CRITERION: Environmental Setting

Facility Categories: Recycling and Landfill

Basis: A general description of each site's topography, surface water bodies receiving site runoff and vegetation will be provided. The classification of surface water bodies which receive runoff from the site will be indicated. Surface water classifications are summarized in Table 7-2. Information on endangered or threatened species will also be included.

Sources: NYSDEC, Surface Water Classification Map, 1981.

New York Natural Heritage Program Rare Plants, Animals, and Natural Communities Print-out, April 27, 1989.

U.S. Geological Survey, 7-1/2 Minute Quadrangle Maps, Various Dates, Scale 1:24,000.

Site drive-by.

CRITERION: Site Life

Facility Category: Landfill

Basis: Siting, permitting, designing and constructing a landfill is a significant undertaking. Thus, it is more desirable to identify a site which can provide long-term disposal capacity. This criterion will evaluate the estimated site life of each potential landfill site. The assumptions are developed as part of Section 5 of this GEIS/SWM Plan, Solid Waste Processing/Disposal Technology Evaluation. These assumptions result in a need for approximately 95 to 115 acres of fill area for solid waste and approximately 10 to 15 acres of fill area for incinerator residue. This estimated area excludes buffer areas and areas for support facilities. (If these areas are included a land parcel of approximately 250 acres would be required if one, optimally shaped site was utilized.) It is assumed that the maximum depth of fill will be

approximately 100 feet for solid waste and approximately 70 feet for incinerator residue.

Because a major objective of the siting process is to identify highly suitable potential landfill sites based on many factors exclusive of site life, sites which cannot individually provide disposal capacity for the entire planning period (1994-2013) may be considered.

Source: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

CRITERION: Transportation Routes/Site Access

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-2.12(e)(2) requires the adequacy of transportation routes to be considered when evaluating potential landfill sites. Transportation routes will be evaluated by describing one possible route to a potential site from the waste centroid and indicating the functional classification of the roads which would be travelled on the identified route. If special weight or height restrictions are known to exist, they will be noted.

New York State issues overweight divisible load permits (R permits) which allow certain vehicles to carry a divisible load that exceeds the weight limits specified in the Vehicle and Traffic Law. As of January 1, 1989, an R permit allows a vehicle to carry up to 135 percent of its legal limit. Certain bridges within the Planning Unit are posted "No Trucks with R Permits". Bridges on state routes, including those with this posting, have a maximum weight limitation of 40 tons. Bridges that have weight limits less than 40 tons are posted with the appropriate weight limit.

Sources: NYSDOT, Functional Classification Maps, 1984 and 1985, Scales 1:63,360 and 1:24,000.

Albany County Department of Public Works, Map of County Bridges, 1989, Scale 1:63,360.

Site drive-by.

CRITERION:	Incompatible Structures
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR Part 360-2.12(e)(3) requires consideration of proximity to incompatible structures such as schools, houses of worship, nursing homes, hospitals and commercial districts when evaluating potential landfill sites. Incompatible structures within 1,000 and 2,000 feet of the preliminarily delineated outline of a potential site will be identified.
Sources:	NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000. Site drive-by.

CRITERION:	Utility Lines/Rights-of-Way
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR Part 360-2.12(e)(4) requires consideration of utility lines when evaluating potential landfill sites. The presence of utility lines or rights-of-way within the preliminary site outline will be identified.
Sources:	NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000. Site drive-by.

CRITERION:	Emergency Services
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR Part 360-2.12(e)(6) requires consideration of risk due to fires and availability of appropriate emergency services when evaluating potential landfill sites. Consideration of availability of appropriate emergency services is appropriate for all types of facilities. The location of the nearest emergency response unit, fire station, and pressurized water line or perennial surface water body will be identified. The accessibility and available capacity of these services will be evaluated following the preparation of the draft GEIS/SWM Plan.

Sources:	NYSDOT 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.
	Local Municipal Water System Maps.
	Site drive-by.
CRITERION:	Air Quality/Visual Effects
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR Part 360-2.12(e)(7) requires consideration of the environmental effects of a landfill including visual effects and effects on air quality. Air quality and visual effects will be evaluated for all types of facilities. Air Quality attainment/non-attainment zones for each of the six ambient air quality standards will be identified. The potential visibility and aesthetics of the site from roads and adjacent areas will be addressed comparatively.
Sources:	NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.
	Site drive-by.
CRITERION:	Cultural Resources
Facility Categories:	Recycling and Landfill
Basis:	6 NYCRR requires consideration of proximity to open space, cultural, historical and recreational resources when evaluating a potential landfill site. During Phase 1, Exclusionary Phase, public parks, recreational areas and Nature Conservancy Holdings will have been eliminated from further consideration. Other open space and recreational resources such as camping facilities and golf courses will be considered under this Phase 3 evaluation criterion.
Sources:	NYS Office of Parks, Recreation and Historic Preservation, State Historic Preservation Maps and preliminary literature search.
	County of Albany, Historic Scenic Sites Map, Albany County Tricentennial Commission, 1983.

Albany County Planning Department, Environmental Management Council, Map of Open Space for Albany County.

NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

NYSDOT, Albany and Schenectady Counties, 1989, 1 Sheet, Scale .1;75,000.

Site drive-by.

CRITERION: Agricultural Land

Facility Categories: Recycling and Landfill

Basis: 6 NYCRR Part 360-2.12(e)(9) requires consideration of effects on agriculture and agricultural land when evaluating potential sites. In Phase 1, Exclusionary Phase, areas within agricultural districts which contain soil groups 1 or 2 will have been eliminated from further consideration. Under this criterion remaining agricultural areas will be addressed. Potential sites will be evaluated with regard to (a) whether they are located within agricultural districts, and (b) current level of cultivation, if any.

Sources: USDA, Soil Conservation Service, Albany County Office. Agricultural District Maps, 1974, Scale 1:24,000.

Site drive-by.

CRITERION: Distance From Waste Centroid

Facility Categories: Recycling and Landfill

Basis: This criterion will consider the incremental financial and environmental cost of transporting solid waste by evaluating the proximity of each potential site to the center of solid waste generation (waste-centroid) within the Planning Unit. It is assumed that for each municipality within the Planning Unit, the center of waste generation can be approximated by the population center. The waste centroid for the Wasteshed is located in the City of Albany in the northeast portion of the Wasteshed as shown in Figure 7-1. The location of the waste centroid coincides

approximately with the location of the ANSWERS RDF Plant on Rapp Road.

Sources: Capital District Regional Planning Commission, A Profile of the Capital District, Second Edition, 1986.

City of Albany, ANSWERS Scale House Data, 1988.

Short-Term Waste Identification Study, May/June 1989.

CRITERION: Ease of Acquisition

Facility Categories: Recycling and Landfill

Basis: Although it is expected that a Solid Waste Authority will be formed for the Planning Unit and that the Authority will have the power of eminent domain, site acquisition difficulties may remain. In general, it should be less difficult to acquire sites which contain no utility rights-of-way and are held by a single or only several land owners. In addition, it would be easier to require sites which are volunteered by a person or entity who either owns the site or has the ability to acquire and convey the site. Available information on rights-of-way and the number of parcels will be identified. In addition, volunteered sites will be identified.

Sources: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

Albany County Hall of Records, Tax Maps.

Site Drive-by.

CRITERION: Reservoir Drainage Basin

Facility Category: Landfill

Basis: The purpose of this criterion is to minimize the risk of contamination to reservoirs which are used for public water supplies. The risk of significant environmental impact (or contamination of) ground water or surface water quality from a state-of-the-art landfill is very low. However, if a potential site is in a reservoir drainage basin it will be indicated and further evaluated subsequent

to the preparation of the draft GEIS/SWM Plan as part of a final site selection process.

Sources: NYSDOT, 7-1/2 Minute Quadrangle Maps, 1983, Scale 1:24,000.

New York State Atlas of Community Water Systems, 1982.

CRITERION: Availability of Utilities

Facility Categories: Recycling and Landfill

Basis: All solid waste management facilities require water supply, wastewater disposal and electrical service. In some instances these services can be provided by on-site systems. In other cases, access to municipal services is important. The proximity of potential sites to these types of existing utilities will be indicated. The accessibility and available capacity of these services will be evaluated following the preparation of the draft GEIS/SWM Plan.

Sources: Utility Maps from Municipalities.

Site drive-by.

CRITERION: Co-Location Potential

Facility Categories: Recycling and Landfill

Basis: Locating more than one solid waste management facility at the same site may offer numerous advantages. The potential co-location of more than one recommended technology will be indicated for each potential site.

B. Application of Siting Criteria to a Hypothetical Wasteshed

1. Introduction

Through the use of a hypothetical wasteshed, Wasteshed X, (see Figure ES-A1) this section illustrates the manner in which the process described in Section 7 of the ANSWERS Wasteshed draft GEIS/SWM Plan, Siting Approach and Criteria, will be applied to identify potential sites for solid waste management facilities in the ANSWERS Wasteshed. While it is not possible to present all aspects of the siting process by example, the application of some of the landfill siting criteria to a hypothetical wasteshed is presented here illustrate the general approach which will be used in the siting of the MRF and landfill facility(ies) recommended in this Plan. The criteria to be used in identifying potential sites in the ANSWERS Wasteshed, however, will be the full set of criteria presented in Table ES-A4, not the abbreviated set of criteria used in this example.

2. Phase 1, Exclusionary Criteria-Illustration

Application of the exclusionary criteria will result in the identification of areas potentially available for a landfill in the wasteshed. Figures ES-A2 through ES-A4 in this example represent the total listing of the map-based exclusionary criteria for the hypothetical Wasteshed X. (For visual clarity, a number of exclusionary criteria applicable to the ANSWERS Wasteshed including some exclusionary criteria which are small map features, for example floodplains, are not used in this example.) By compiling the information contained in Figures ES-A2 through ES-A4, a composite map, Figure ES-A5, results which depicts the potentially available areas for landfill siting in the hypothetical wasteshed. (For the ANSWERS Wasteshed, maps which are similar to those which will be used for some of the exclusionary criteria, are included in Section 6 of this GEIS/SWM Plan, Environmental Setting, as Figures 6-3, 6-4 and 6-5.)

3. Phase 2, Preferred Area Identification Phase - Illustration

Through the application of preferred criteria, Phase 2 of the siting process is intended to identify sites with the most desirable characteristics. Preferred criteria will be applied to areas that were previously identified as potentially available by the application of exclusionary criteria. Figures ES-A6 through ES-A8 present information on geology,

criteria. Figures ES-A6 through ES-A8 present information on geology, zoning, and public roads for the hypothetical Wasteshed which, for this example, are intended to represent all of the Phase 2 criteria for the hypothetical wasteshed. This information will be used to identify preferred areas based on soil type, zoning type, acreage and configuration. In this example, application of the preferred criteria to the hypothetical Wasteshed X results in only one preferred area, Area A, which is shown in Figure ES-9. Figure ES-9 also shows other potential sites which result from modifying the preferred criteria as discussed below.

It is desirable to have a number of sites under consideration at this stage of the siting process, since site-specific information which could result in the elimination of sites has not yet been incorporated. Therefore, it becomes necessary to modify the preferred criteria to allow for the identification of additional potential sites. In this hypothetical case, at this point in the evaluation, it is determined that the Phase 2 criteria should be modified to include as preferred areas, areas which are zoned other than industrial or heavy commercial and areas which are smaller than the originally preferred size. The application of the modified Phase 2 criteria results in the identification of five additional sites identified as Sites B through F as shown in Figure ES-9.

4. Phase 3, Evaluation/Recommendation Phase - Illustration

During the Evaluation/Recommendation Phase, each candidate area, or potential site, identified as a result of applying the preferred criteria, is further characterized. As potential sites progress from Phase 2 to Phase 3, no distinction is made as to whether a potential site was identified by the initial preferred criteria or the modified preferred criteria. However, the site characteristics which are considered in the original preferred criteria are reconsidered in the evaluation criteria, so that any differences between potential sites should be identified in Phase 3.

For each site, a factual summary will be prepared. The factual summary will present information, and the source of information, for each evaluation criteria. Based on the site summaries, each potential site will be designated as either high, medium, or low with respect to each evaluation criteria, based on a comparison with the other potential sites. (A characterization as "High" will indicate more desirable conditions.)

To provide an example, two of the Phase 3 criteria are evaluated in detail for the hypothetical sites. One criteria, distance to the waste centroid, is readily quantifiable, whereas the other criteria, environmental setting, is not.

The characterization of sites for the distance from the waste centroid criterion is presented in Table ES-A1. This characterization is based on a straightforward comparison of the distance of the sites from the waste centroid. For the environmental setting criteria, sites will be characterized based on the local topography, vegetation, surface water bodies, and wildlife habitat. Potential sites which provide little or no habitat for aquatic or terrestrial species, due to existing land use, are likely to be characterized as "High". Potential sites which may provide habitat for an endangered or threatened species are likely to be characterized as "Low". Potential sites which are intermediate to these conditions are likely to be characterized as "Medium". Table ES-A2 presents the characterization of the hypothetical sites for assumed environmental settings, the specifics of which have not been fabricated.

In a similar manner, all potential sites will be characterized for all evaluation criteria. A summary table, similar to Table ES-A3, will be prepared. Because all evaluation criteria are not equally important in characterizing the suitability of a site for implementing a particular type of solid waste facility, Phase 3 criteria are characterized as primary and secondary criteria. These criteria are categorized in Table ES-A3. As discussed in Section 7 of the ANSWERS Wasteshed draft GEIS/SWM Plan, Siting Approach and Criteria, primary criteria will be given more weight than secondary criteria in evaluating the suitability of potential sites.

Based on the characteristics of the potential sites, four sites from the hypothetical Wasteshed X have been selected for further study. It is desirable that a minimum of three sites, and no more than five sites will be recommended for further study. The guiding factor in the number of sites recommended for further study is identifying a reasonable grouping of all Phase 3 sites into two groups - a "more favorable" group and a "less favorable" group. The sites recommended for further study in this hypothetical example, A, B, D and F, compare favorably with respect to the

primary evaluation criteria. All sites meet the exclusionary and preferred criteria; sites A, B, D and F appear to be more suitable. Sites C and E, which are not recommended for further study, are not permanently eliminated from consideration. These sites may be recommended for further study should sites A, B, D and F prove to be either inaccessible for further study or use, or otherwise unsuitable for development.