REPORT OF THE

Solid Waste Commission

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

Senate Document No. 8

COMMONWEALTH OF VIRGINIA
RICHMOND
1985

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TABLE OF CONTENTS

REPORT OF THE
SOLID WASTE COMMISSION
TO
THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA
RICHMOND, VIRGINIA

January, 1985

The Solid Waste Commission was created by the 1973 General Assembly in Senate Bill No. 856 directing the Commission to study waste management and to advise the Governor and Legislature on all matters relating to solid wastes. As defined by the Commission, its objectives are:

- -To analyze the problems associated with the management of all types of solid wastes and report findings;
- -To develop recommendations and implement programs designed to improve waste management; and
- -To sponsor legislation to improve solid waste management.

As specified by legislation, the Commission is composed of six State legislators, seven citizens with technical expertise, and two citizens representing an environmental interest. The legislators are assigned to the Commission by the Speaker of the House or the Senate Committee on Privileges and Elections. Citizen appointments are made by the Governor, normally for four-year terms. A chairman is elected biannually among the members of the Commission. The current chairman, Dr. Robert F. Testin, is one of seven citizen-technical appointees.

The responsibilities of the Solid Waste Commission are met through the activities of working committees formed to address specific waste management issues. In addition, the member legislators form the Legislative Committee, providing valuable support to the Commission in the General Assembly. Committees and their membership are as follows:

Hazardous Waste Committee
Mr. R. E. Dorer, Chairman
Senator Joseph V. Gartlan, Jr.
Mr. Timothy G. Hayes
Dr. Michael Markels, Jr.
Delegate James W. Robinson

Low-Level Radioactive Waste Committee
Delegate R. Beasley Jones, Chairman
Mr. Martin R. Adams
Delegate C. Richard Cranwell
Mr. Timothy G. Hayes
Dr. Michael Markels, Jr.
Mr. Frank H. Miller, Jr.

Resource Recovery Committee
Mr. Callis H. Atkins, Chairman
Delegate Frank D. Hargrove
Mr. Frank H. Miller, Jr.
Ms. P. K. Pettus
Mr. David M. Rothwell
Dr. Robert F. Testin

Legislative Committee
Senator Stanley C. Walker, Chairman
Senator Joseph V. Gartlan, Jr.
Delegate C. Richard Cranwell
Delegate Frank D. Hargrove
Delegate R. Beasley Jones
Delegate James W. Robinson

Program Committee
Dr. Robert F. Testin, Chairman
Mr. Callis H. Atkins
Ms. P. K. Pettus

The Commission office in the General Assembly Building houses the Commission's executive director and an administrative assistant/secretary. This staff provides daily liaison with other State offices, such as the Health Department, Hazardous Waste Facility Siting Board and the

Governor's Office, as well as the administration of the Commission's work program.

The term "solid waste" includes a variety of waste forms with distinctive management requirements; it does not include sewage or industrial discharges subject to permitting by the State Water Control Board. The most commonly encountered solid waste is municipal solid waste, refuse and discarded materials from residences and commercial activities. Other large volume solid wastes include industrial and agricultural wastes and residues from mining operations. Hazardous waste refers to those by-products, generally from manufacturing processes, that are ignitable, corrosive, toxic or reactive, or that are listed as hazardous wastes pursuant to applicable federal or state regulations.

Plans for management of radioactive wastes have received a great deal of attention in the Commonwealth during the past year. Radioactive wastes are defined by the degree of radioactivity and the processes from which the waste originates. Low-level radioactive waste consists of materials that are slightly radioactive (less than 10 nanocuries per gram of material); such wastes are generated by nuclear power plants, nuclear medical practices, and certain research and industrial activities. High-level radioactive waste is the product of fission and nuclear fuel reprocessing; spent fuel from nuclear power plants is the most common form of this category of radioactive waste.

Resource recovery has become a popular term that applies to many processes that recapture usefulness from a waste stream. Reclaiming recyclable materials and returning them to productivity promotes conservation of raw materials and natural resources. Incineration of waste to produce energy is another resource recovery technique that

provides a useful product from discards and reduces the demand on landfill capacity.

Safe and economically feasible waste management is critical to the protection of public health, natural resources and the environment and to the continuing development of a prosperous economy.

The body of this report is a summary of the current status on each of the major waste management topics studied by the Commission during 1984 as briefly stated below.

HAZARDOUS WASTE. In responding to SJR No. 37 (1983), the Solid Waste Commission recommended legislation providing a mechanism for the siting of hazardous waste facilities. The 1984 General Assembly enacted the legislation substantially as recommended, establishing the Hazardous Waste Facility Siting Board. The new law became effective July 1, 1984.

Changes in federal law defining hazardous waste management requirements are likely to heighten the need for properly designed and licensed facilities for treatment, storage and disposal of hazardous wastes. As a result of the changes, the number of hazardous waste generators in Virginia required to comply with new regulations will increase from 449 to over 20,000. The Solid Waste Commission intends to review the impact of the new law during 1984 and determine what, if any, measures are necessary to accommodate the law for the interests of Virginia's citizens, industry, and environment.

Pursuant to the request of the 1984 General Assembly in SJR No. 21, the Commission contracted with VPI&SU for a study of policy options to encourage alternatives to land disposal of hazardous waste. The report discusses (1) available and emerging processes to reduce or eliminate the

hazardous characteristics of certain wastes, (2) types and volumes of hazardous waste generated in Virginia, and (3) financial, legal and institutional options for encouraging alternatives to land disposal. Recommendation for a course of action cannot be made without an assessment of the economic impact and usefulness of the options and a study of the effects of the limits on land disposal required by the recently enacted amendments to the federal Resource Conservation and Recovery Act (RCRA).

During 1984, the Solid Waste Commission addressed the issue of hazardous waste transportation. It was determined that this matter is only a part of a much larger issue --hazardous materials transportation-- and that hazardous wastes comprise only a small part of the hazardous materials transported in and through the Commonwealth on a daily basis. Several state, federal and local agencies have authority to respond to transportation accidents involving hazardous materials. The adequacy of the ability to respond does not appear to be a question of legislated authority but rather a matter of a locality's ability to be prepared for emergency action.

LOW-LEVEL RADIOACTIVE WASTE. Through its public participation program (funded by the U. S. Department of Energy) the Solid Waste Commission continued to distribute information to enhance the public's participation in State and regional activities in low-level radioactive waste management. The Department of Energy grant provided funding for a two-day public workshop in Richmond, a series of public meetings in five localities across the state, and the preparation and distribution of a newsletter sent to over 900 recipients, including State legislators. The grant program was to expire on December 31, 1984. Because the Commission

wishes to involve the public in the Southeast Compact Commission's identification of the next state(s) to host a low-level waste disposal facility, it is seeking a time extension of the grant.

HIGH-LEVEL RADIOACTIVE WASTE. Implementing the Nuclear Waste Policy Act of 1982, the U. S. Department of Energy has identified Virginia as one of 17 states with crystalline rock formations under consideration for the siting of a high-level radioactive waste repository. Department reports describing their plans for repository site selection, development and operation have been examined, and comments were submitted to assert Virginia's interest in the department's activities. Information currently being collected by the Department will be used to identify 15 to 20 areas within the 17 states for investigation of the suitability for long-term isolation of high-level waste in an underground repository. The identification of these areas is expected to be announced in May 1986.

RESOURCE RECOVERY. To assist localities with the consideration of using municipal waste as an energy resource, the Solid Waste Commission cooperated with the State Division of Energy in the preparation and distribution of a questionnaire and feasibility guide for waste-to-energy projects. Data provided by questionnaire responses will be analyzed during 1985.

Detailed reports of these four topics and an agenda for Commission plans for 1985 follow in this report.

HAZARDOUS WASTE

New Federal Legislation

In October 1984, Congress enacted substantial changes to the major federal hazardous waste law, the Resource Conservation and Recovery Act (also known as "RCRA"). The amendments include requirements for phased restriction on land disposal of certain categories of waste and federal review of the feasibility of restricting land disposal for all categories of waste. The review and development of regulations will extend over a period of two to five years.

The amendments also reduce the threshold for compliance from a generation level of 1000 kilograms per month to 100 kilograms per month. Regulations affecting small-quantity generators are required to be drafted within one year. These regulations will require thousands of small businesses in Virginia not currently subject to the law to ship waste to properly developed and permitted hazardous waste facilities.

Perhaps the most important new provision among the RCRA amendments is the required regulation of underground storage tanks. The Environmental Protection Agency (EPA) must develop standards for new tanks and establish a regulatory program for existing underground tanks. This provision alone is expected to effect two to three million units in the U. S. It is not restricted to tanks containing wastes, but covers tanks holding gasoline and other petroleum products as well as numerous other materials.

The Solid Waste Commission has begun to examine the amendments to RCRA to determine what action may be necessary to accommodate the law to best reflect the interests of Virginia's citizens and businesses. In December,

the Commission arranged for satellite reception of an EPA briefing on the amendments, and invited local government officials and business leaders to view the briefing. During 1985, the Commission intends to continue examination of the amendments and assess the impact for Virginia.

Facility Siting

The Solid Waste Commission, in early 1984, completed its task under Senate Joint Resolution No. 15 by recommending to the General Assembly that it enact legislation providing for the safe and equitable siting of hazardous waste management facilities. The Commission submitted, as part of its recommendation, suggested draft legislation based on two years of study, discussion and comment from industry, government agencies, citizen groups and the public. The legislation was introduced as Senate Bill 170, the Virginia Hazardous Waste Facilities Siting Act. (A description of the legislation and its history may be found in the Commission's Annual Report for 1983.)

The Act passed in substantially the same form as recommended by the Commission and was signed by the Governor in April.

In July, the seven members of the new Hazardous Waste Facility Siting Board ("Board") were appointed. In August, members and staff of the Solid Waste Commission briefed the new Board members on the Siting Act and on the state's hazardous waste regulatory statutes and programs.

Because no staff or facilities were available to the Board in 1984, the Solid Waste Commission staff provided support for the Board during its start-up period. The staff organized and conducted several meetings in which the Board developed procedures and regulations, agreed on its agenda, elected a chairman and compiled a discussion draft for the development of facility siting criteria. The Board's criteria and regulations will be substantially

in place by August, 1985, when it may begin reviewing facility site applications. It is expected that the Board will have its own staff by that time, however, the Solid Waste Commission will be available to assist the Board as necessary and appropriate.

The Commission has also assisted in the resolution of the question of the Siting Board's organizational "home". The Siting Board is an independent agency whose siting decisions are subject only to judicial review. However, for administrative budgeting purposes it is necessary to locate it within the cabinet structure in the Executive Branch. The Commission advised the Governor that the desired organizational location of the Siting Board was within the Secretariat of Administration, and an Executive Order was issued by the Governor in October reflecting the Comission's recommendation.

The Commission also advised the Governor that second-year funding for the 1984-86 biennium should be pursued for the Hazardous Waste Facility Siting Board.

Land Disposal Alternatives

Alternatives to the land disposal of hazardous wastes, and the reduction of the volume of wastes needing treatment or disposal, have become important objectives of public policy in the past two years. It has become evident that, for many wastes, land disposal is undesirable or inappropriate because of the constant danger of leakage to the environment. Furthermore, the long-term costs of maintenance, monitoring and cleanup can make land disposal less of a "bargain" than it was long assumed to be. The costs of managing wastes have increased, as has the difficulty of finding adequate facilities for disposal. Accordingly, process changes, technology that reduces waste at

the source, recycling and treatment methods that reduce or eliminate waste are becoming increasingly important.

Several states, beginning with California, have begun to restrict the use of land disposal for certain hazardous wastes and to encourage alternatives. The new RCRA amendments, described above, will also result in the phase out of land disposal for certain wastes. The General Assembly in 1984 adopted Senate Joint Resolution No. 21, which requests the Solid Waste Commission to conduct a study of the feasibility of alternative treatment technologies and the financial, legal and other options available to the Commonwealth to encourage the use of such alternatives. (See Appendix A.)

The Commission, after reviewing several proposals, contracted with Dr. David Conn of VPI&SU to conduct a study in accordance with Senate Joint Resolution No. 21 and report his findings to the Commission. A summary of the report is included as Appendix B. Copies of the full report are available from the Commission office.

The study report describes the various existing and emerging processes for thermal, chemical, physical and biological treatment of wastes, that reduce or eliminate certain wastes. Data made available from the State Health Department's annual report to the Environmental Protection Agency provides a summary description of the volume and types of hazardous waste produced in the state. The report also describes financial, legal and institutional options that, if employed, could encourage the use of alternative processes.

The recent changes in federal law described earlier limiting land disposal of hazardous waste should be evaluated to determine the need for appropriate incentives for the use of alternative waste management

technologies. The Commission will review the impact of the new requirements during the coming year.

Accordingly, the Commission's response to Senate Joint Resolution No. 21 is intended to ensure that actions undertaken by the General Assembly and state agencies are appropriate to meet the new federal statutory requirements.

Transportation Safety

Finally, the Commission addressed the issue of hazardous waste transportation safety in Virginia. Hazardous wastes comprise a small fraction of the total amount of hazardous materials transported in and through the Commonwealth every day.

The U. S. Department of Transportation has promulgated regulations for the transportation of hazardous materials and those regulations have been adopted by the Department of Health. Hazardous waste transportation safety is governed by the hazardous materials regulation. The regulations are enforced in Virginia by the State Department of Health and the State Police, which has specially equipped and trained troopers to inspect transporters and respond to accidents.

Spill response capability varies depending upon the jurisdiction involved. Although the federal government has an extensive capability under the National Contingency Plan, it does not ordinarily respond to small or localized spills. The Department of Health, State Water Control Board, State Police and Office of Emergency Services have the capability to respond and coordinate cleanup and safety measures. The capability of local governments, which often are first on the scene and most directly affected, tends to vary

widely. A few jurisdictions have excellent capability while others are poorly equipped and lack necessary training.

The major shortcoming, the Commission found, is not lack of authority to regulate transporation safety, but lack of resources--particularly at the local level--to equip and train personnel to respond to accidents involving hazardous materials.

Waste-to-Energy Feasibility

During 1984, the Solid Waste Commission continued its program to provide information concerning resource recovery to Virginia jurisdictions.

In recent years, Virginia cities and counties facing diminishing landfill capacity have considered resource recovery systems for management of municipal refuse. Some localities, at considerable cost, have attempted to determine the feasibility of alternatives, and other localities have expressed interest but lacked direction to begin such assessment.

Responding to this situation, the Division of Energy of the Office of Emergency Services initiated a project to assist local governments. The Division of Energy, working with the Solid Waste Commission and the Resource Recovery Committee in particular, completed a workbook that guides interested localities through an assessment of the feasibility for establishing and successfully operating a waste-to-energy facility. The workbook was completed and distributed to local governments who were asked to complete the workbook and return information regarding current refuse disposal practices. The Division of Energy also announced that 400 hours of free consultant time was available to localities which desired assistance in addressing waste-to-energy feasibility after completing the workbook.

In August, a workshop was held in Richmond to discuss the workbook; over 100 representatives of local governments, and planning district commissions, engineers, and media persons participated in the workshop.

More than 50 communities have used the workbook to assess waste-to-energy feasibility and responded to the questionnaire. It is estimated that one-third of those communities will request available consultant services.

Information on existing refuse disposal operations provided by Virginia localities using the workbook is included in this report as Appendix D.

Resource Recovery by State Agencies

The Solid Waste Commission recognizes the efforts of individual State agencies to recycle and encourage reuse of materials, including:

The Department of Alcoholic Beverage Control, which bales and sells its cardboard boxes and corrugated materials;

The Department of General Services' Division of Purchases and Supply, which has developed annual contract specifications for use by State agencies and institutions, and in some cases, by local governments as well;

The Division of Purchases and Supply's State Surplus (also within the Department of General Services) which sells their computer printout and ledger sheets annually to the highest bidding paper company; and

The Division of Litter Control (within the Department of Conservation and Economic Development) which has an "800" number telephone regarding recycling and collection, and provides a manual on operating a collection/recycling agency.

Resource Recovery Projects in Virginia

Resource recovery projects in Virginia continue to be successful:

Hampton/NASA/USAF Refuse-Fired Steam Facility - This facility has operated successfully at capacity since 1980. The plant is owned by NASA and operated by the City of Hampton. In 1983 a zero tipping fee was achieved with steam sales paying all operating costs. This is the only resource recovery plant in the United States that is known to have achieved such success.

Harrisonburg - A mass burning facility providing steam for heating and cooling James Madison University. Plant has been operational since 1982.

Ft. Eustis - Two 30/day modular incinerators produce steam for heating hot water and cooking. In operation since 1980.

Norfolk Naval Station - Two 180-ton/day mass fired water wall furnaces have operated since 1967. Produce steam for use by Norfolk Naval Station.

Norfolk Naval Shipyard (Portsmouth) - Two 80-ton/day mass fired water-wall furnaces. Produce steam for Naval Shipyard facilities.

Portsmouth (Southeastern Tidewater Energy Project - Plant to prepare 2,000 tons/day of RDF for burning in co-fired furnace to produce steam for Norfolk Naval Shipyard. Steam plant capable of burning both RDF and coal is currently under construction; RDF plant has not been built.

Salem - 100-ton/day mass fired modular incinerator produces steam for Mohawk Rubber Company. Plant has been in operation since 1979.

Information regarding the status of materials recovery and waste-to-energy projects in other states is available in the Commission office.

Flow Control

The term "flow control," refers to the legal right to direct the "flow" of solid wastes to a designated disposal or resource recovery facility.

Under this concept, a governing body, an authority, etc., is given the power to direct that solid waste be taken to a particular location for disposal or recycling. This power may take the form of obtaining ownership of the waste when it is put out for collection or simply directing that all waste must be disposed of at a particular location.

In theory, such a concept is beneficial to the operation of a particular disposal site or resource recovery facility by guaranteeing a source of supply. The concept has been considered most frequently in the area of resource recovery where a facility may be capital intensive; and where, in the short term, at least, the facility costs are not competitive with other available disposal sites or methods.

The concept of flow control has become controversial because there are business segments who perceive great help or harm to their operations from such legislation. The proponents usually include representatives of the financial community who see flow control as guaranteeing a raw material supply (and, hence, financial viability) for resource recovery projects. Proponents can also include communities desiring resource recovery and other interests who profit from the building of such systems.

Opponents to the concept include waste paper companies and other businesses who rely on scrap products as a source of raw material. These interests perceive that flow control can be a way of directing recyclable products from their operations to centralized resource recovery plants. The refuse collection and disposal industries also generally oppose the concept for several reasons. The profit of these businesses can be hurt if they are directed to take refuse to a higher cost disposal facility. Also, these businesses often run solid waste disposal facilities, such as land fills, that are in competition with proposed resource recovery plants. Finally, some oppose flow control as another unnecessary intrusion of government into the daily lives of citizens.

Legally, the concept has yet to be fully tested in the courts, although at least one case had made it to the Supreme Court and is now back at a lower court for review. To date, the court record has been one of upholding the legality of the concept of flow control, although each approach must be tested on its own merit.

It is the position of the Solid Waste Commission that the concept of flow control is one for the legislators and the courts to decide. The pros and cons are fairly clearly drawn and the issues are basically of fairness and legality rather than a clearly perceived need or lack of it. Further,

the Commission urges that, should flow control measures be adopted by the General Assembly or local communities within the Commonwealth, the legislation be so drawn so as to exempt recyclables from the provisions of the law.

LOW-LEVEL RADIOACTIVE WASTE

The federal Low-Level Radioactive Waste Policy Act of 1980 requires each state to provide for the disposal of low-level waste generated within its borders and allows interstate compacts to share responsibilities for waste management on a regional basis. The Act provides that after 1986, compacts approved by Congress may exclude wastes generated outside the compact regions. For more than a decade Virginia has relied primarily upon the low-level waste disposal facility at Barnwell, South Carolina, which will continue to serve as a regional facility until 1992.

Through the Southeast Compact, preparations are being made to replace the Barnwell facility. Together, Virginia and other Southeast Compact members must decide which state(s) will host a new facility to meet the regional needs as defined in a management plan due April 1985. The Compact agreement requires designation of the next host state(s) by mid-1986 to allow sufficient time for facility siting, development and licensing.

The Commission's previous Annual Report described in detail the development of the Southeast Compact and the Solid Waste Commission's role in assisting Virginia's participation in the Compact. In 1984, the Commission's efforts shifted toward preparing for the possible host state designation and increasing the information and participation available to the public as the Compact's focus narrows on host state selection.

Public Participation

The Commission continued its public participation efforts under the U. S. Department of Energy (DOE) grant originally awarded in 1982. Although

the grant had been scheduled to expire in July 1984, the Department granted the Commission's request to extend the public participation program through to December, 1984. The approved extension allowed the Commission to conduct public meetings and prepare a low-level waste booklet for public distribution. Grant funds supported two-part public meetings in Charlottesville, Roanoke, Alberta, Annandale and Norfolk, concerning waste generation, disposal facility siting, the Southeast Compact, development of a regional management plan and host state identification procedures.

The series of public meetings were arranged as a result of suggestions received at a two-day workshop, sponsored by the Solid Waste Commission, May 8 and 9, in Richmond. The workshop featured speakers from state and federal government, waste generators and disposal facility operators and other experts. The agenda incorporated technical, legal and policy discussions. Attendees included state legislators, agency personnel, industry representatives, members of public interest groups and private citizens. A format of plenary sessions, small workshops and ample discussion time enabled the participants to obtain the maximum benefit from the resources available.

The Commission has also expanded the mailing of its low-level waste newsletter to more than 900 persons, and began maintaining a mailing list of persons interested in receiving the minutes of the Southeast Compact Commission meetings.

In November the Solid Waste Commission approved a resolution encouraging the Southeast Compact Commission to enhance its public participation efforts. The resolution was forwarded for presentation to the Southeast Compact Commission.

The public participation program under of the DOE grant expires December 31, 1984. Although DOE is now focusing on efforts directly related to site

selection, the Commission believes that public involvement is crucial during the host state selection phase. Accordingly, the Commission is seeking an extension of the DOE grant period that will facilitate public discussion of the regional management plan and host state identification described below.

Southeast Compact

The activities of the Southeast Compact focused during 1984 on developing procedures for selection of the initial "host state" for a regional LLW facility, determination of regional facility needs, development of a regional management plan and criteria for site selection. Senator Joseph V. Gartlan, Jr. and Mr. Timothy Sullivan, appointed by Governor Robb, continue to serve as Virginia's members of the Southeast Compact Commission.

At the instigation of the Solid Waste Commission, the compact members agreed to incorporate a thorough review and consideration of waste management alternatives into the development of a regional waste management plan.

Procedures for host state identification assume the unavailability of the Barnwell facility after 1992 and the need to designate a host state by mid-1986. The Compact Commission is following a two-track procedure, with a "participation track" and a "designation track" proceeding simultaneously, while also allowing for any member state to come forward as a volunteer.

Under the participation track, each member state (except South Carolina because it now hosts a LLW disposal facility) is required to submit, by October 15, 1985, a proposal describing its conditions of acceptance for each type of facility identified in the regional waste management plan. The proposals need not be site-specific and even though all states must submit proposals, no state is obligated to volunteer. The Compact is emphasizing the benefits of volunteering, however, and prefers selection by that means.

The designation track assumes that all states in the region are suitable for facility location. Criteria for objective comparison of state suitability are being developed by the Compact Commission for use in the event that no state volunteers as the initial host.

The Compact Commission has selected a consultant to develop selection guidelines and the regional management plan. The plan will examine regional facility needs, and appropriate alternatives to meet those needs, and is fundamental to the host state designation process. When the regional management plan becomes available in the spring of 1985, the Commission will review it to ascertain what must be addressed in the preparation of the State's proposal under the participation track.

Although the Southeast Compact is further along than other regional compacts in the development of selection procedures, there is some cause for concern in that Congress has not yet consented to any compact. Congressional consent is necessary for the compacts to exercise the authority to exclude wastes from outside the compact region--a major inducement for the regional approach. Congress is concerned, however, that waste from all but the three regions that currently have disposal facilities will have nowhere to go after 1986. The Commission will continue to assist with efforts to gain Congressional approval for the Southeast Compact.

HIGH-LEVEL RADIOACTIVE WASTE

The Nuclear Waste Policy Act of 1982 (Public Law 97-425) established the management of high-level radioactive waste as a federal responsibility. The act mandated the Department of Energy to implement the act and provided a schedule for the siting, licensing and development of facilities for safe isolation of high-level radioactive waste (HLW).

The Department of Energy (DOE) has proceeded to identify sites for two HLW repositories in different geological medium. The first repository, to be located in salt, basalt or tuff formations, is expected to be sited by 1991 and operating by the year 2000.

The second repository is to be located in a different geological formation from the first, and DOE is investigating the use of crystalline rock (granite) for the second repository. Virginia was notified in April 1983 that it is among 17 states with crystalline rock formations under consideration for the second repository site. Identification of the site is to be made by 1995, followed by construction and testing for operation by the year 2004.

The act requires DOE to proceed in consultation with the affected states and recognizes two authorities, the Governor and the legislature, within the states. In response, the 1984 General Assembly passed Senate Joint Resolution No. 33 assigning responsibilities of legislative liaison to the Solid Waste Commission's Executive Director.

During 1984, DOE released draft documents detailing plans for implementation of the Nuclear Waste Policy Act and the methodology for screening the crystalline regions in the 17 states to identify potential areas for closer examination. The documents were reviewed and comments were

submitted to DOE by staff from both the legislative and executive branches of the State government. In late December, DOE issued its draft Regional Geologic Characterization Report, identifying the rock bodies under consideration.

In December, the National Conference of State Legislatures conducted a briefing on DOE's repository siting activities and the states' authority to participate in DOE's implementation of the Nuclear Waste Policy Act. Representatives from each house of the legislature (Senator Joseph V. Gartlan and Delegate A. Victor Thomas) and the Executive Director of the Solid Waste Commission attended the briefing.

During 1985, DOE is expected to release additional reports providing the data for selection of 15 to 20 areas in the 17 crystalline rock states. A draft report announcing the selection is expected in November 1985. That report will not become final until six months later, in May 1986. Following the final announcement, DOE will begin field work and preparation of environmental assessments of the areas, leading toward the recommendation to the President of three sites for extensive evaluation in January 1991.

PLANS FOR 1985

During the coming year, the Solid Waste Commission will continue some of its programs and initiate new activities.

Regarding solid and hazardous waste, the Commission plans to review the recent amendments to the Resource Conservation and Recovery Act and consider their impact on Virginia. In particular, the amendments relevant to land disposal of hazardous waste will be studied to determine what, if any, additional incentives are desired to encourage the use and endure the availability of disposal alternatives.

During 1985 two major milestones will be met pursuing a regional management for low-level radioactive waste; the Southeast Compact Commission will adopt a regional management plan detailing regional needs for 1991, and each Compact state will submit a proposal describing how it would meet those needs if designated a host state. The Solid Waste Commission will prepare to assist Virginia's Compact Commission members' consideration of both of these items crucial to the identification of a host state for a regional disposal facility.

The Commission has requested a no-cost extension of the Department of Energy grant to continue the public participation program in low-level radioactive waste management. Extension approval will provide funding for the Commisison to regularly solicit public comment on the Southeast Compact's regional management plan and the host state identification process. If the extension is denied, the Commision will prepare a final report describing results that may have application to other states.

Without the grant, the Commission's public participation activities will be hampered. However, the Commission will make every effort to keep the public abreast of state and regional efforts toward low-level waste disposal as this important work proceeds.

In the area of resource recovery, the Solid Waste Commission will continue to review on-going projects and lend its technical expertise to localities interested in pursing resource recovery as part of their waste management programs. The Commission is aware that the RCRA amendments may cause an increasing number of localities to seek such alternatives to landfills for refuse disposal.

In all areas of waste management the Commision will continue to communicate with other relevant state agencies and waste management authorities in its advisory role to the Governor and the General Assembly on matters relating to solid wastes.

APPENDIX A

SENATE JOINT RESOLUTION NO. 21

Requesting the Solid Waste Commission to study policy options available to the Commonwealth to encourage alternatives to land disposal of hazardous waste.

Agreed to by the Senate, February 14, 1984
Agreed to by the House of Delegates, March 6, 1984

WHEREAS, the Solid Waste Commission is charged with the responsibility to study all problems incident to the disposal of solid wastes and with the evaluation of what measures can best be employed to provide for the disposition of wastes without adverse effect on the environment; and

WHEREAS, on a national level approximately eighty percent of currently regulated hazardous wastes are disposed of through land-burial techniques; and

WHEREAS, a substantial amount of this waste remains hazardous for years to come and creates a potential risk of contaminating the environment, particularly groundwater; and

WHEREAS, currently available technologies demonstrate that most hazardous wastes can be detoxified through physical, chemical or biological treatment processes; and

WHEREAS, detoxification, reuse, neutralization or other means of destroying hazardous wastes provide alternatives to land disposal, thus having a substantial effect on preventing groundwater contamination; and

WHEREAS, recent federal regulations will have a substantial economic impact on hazardous waste generators by increasing the cost of landfilling significantly, thereby making alternatives to land disposal more economically competitive; and

WHEREAS, many states are investigating and initiating alternatives to land disposal techniques, and it would be in the best interest of the Commonwealth to take similar action; now, therefore, be it

RESOLVED by the Senate of Virginia, the House of Delegates concurring, that the Solid Waste Commission is requested to conduct a study to assess the technical and economic feasibility of alternative treatment and disposal methods for hazardous wastes. The Commission shall consider detoxification, reuse, incineration, stabilization and any other alternative methods of treatment and disposal which it deems appropriate. The Commission is further requested to examine financial, legal, institutional, and other options available to the Commonwealth to encourage alternatives to land disposal of hazardous wastes.

All agencies of the Commonwealth shall assist the Commission in its study.

The Commission shall report its recommendations to the Governor and the 1985 Session of the General Assembly.

APPENDIX B

EXECUTIVE SUMMARY

Where feasible alternatives are available, the use of land disposal for the management of most untreated hazardous wastes, even in facilities designed and operated according to the latest federal and state standards, is increasingly being viewed as posing unacceptable risks to human health and the environment. In recently enacted amendments to the federal Resource Conservation & Recovery Act (RCRA), Congress directed the Environmental Protection Agency to promulgate standards for treatment and to severely limit the land disposal of untreated wastes.

The present report is intended to assist the Solid Waste Commission in responding to a request from the Virginia General Assembly (made prior to passage of the RCRA amendments) for a study of ways that might be available to the Commonwealth to encourage alternatives to the land disposal of hazardous wastes. The report makes no attempt to compare these alternatives to land disposal itself.

Following an introduction, the second chapter reviews the various thermal, chemical, physical, and biological processes that are available for the treatment of hazardous wastes, along with waste reduction strategies to reduce the amount of material generated. This chapter focuses primarily on the description of technologies, paying less attention to their likely economic feasibility for Virginia. Many of the processes described are already in use for other industrial purposes. The technologies are divided into three categories: Major, Emerging, and Minor. Major technologies are those already being used in full-scale plants for hazardous waste treatment. Emerging technologies are those expected to play a major role in the future, though currently in the pilot plant stage. Minor technologies are those that are either still evolving or have specialized or limited applications to hazardous wastes. For each of the Major and Emerging technologies, the chapter includes a description, a statement of waste stream applicability, and a brief comment on the likely potential for Virginia. The Minor technologies are described more briefly.

The third chapter reviews policy options that a state might employ to encourage the use of the alternative technologies identified in the previous chapter. The policy options are organized under the categories of:

1. Incentive strategies (including financial incentives such as fee systems and institutional incentives such as fast-track permitting);

2. Command strategies (regulatory controls); and

3. State initiatives (such as research and development).

The chapter also briefly reviews planning and implementation procedures which, if used to a greater extent than at present, might enhance the effectiveness of whatever policy options are adopted.

In the final chapter, the technologies and policy options are examined specifically in the Virginia context. Table 1 lists several strategies available for waste reduction and exchange, while Table 2 provides a comparison of the various Major and Emerging treatment technologies, with some general cost information included. It is noted that, since most systems are custom-built, capital and operating costs will vary widely.

It is reported that two commercial technologies are being used currently in Virginia. These are solvent recovery and incineration in a cement/aggregate kiln. Solvent recovery is used for low boiling point solvents while cement/aggregate kiln incineration is used for high BTU organics. It appears that sufficient capacity is available in Virginia to handle all such wastes currently generated in-state.

Wastes which cannot presently be handled in-state include heavy metal-containing wastes such as plating process sludges and low BTU combustibles, as well as high boiling point solvents. In addition, no commercial facilities exist for the neutralization of acids and alkalis.

It is suggested that these wastes could be handled using several technologies. For inorganics, solidification followed by land disposal would be acceptable. For either low BTU or high boiling point organics, land farming may be possible, or specially designed incinerators such as molten salt or wet air oxidation may be used. Land farming is currently being used by a private corporation for oily sludge disposal. Both acids and alkalis can be neutralized by standard neutralization techniques already commonly used by industry, with acids amenable to economic recovery given sufficient volume.

It is pointed out, however, that the necessity for any treatment may be reduced or eliminated through waste reduction practices, which many consider to be the most desirable approach to waste management whenever feasible.

Turning its attention to the policy options that might be employed in Virginia to encourage the use of alternatives to land disposal, the chapter provides a table (labeled Table 3) that might be used in a preliminary assessment of these options. The table, which indicates likely implementation requirements for the various options, is reproduced in this summary. Since it was beyond the scope of the present study to examine the Virginia situation in detail, the table is based largely on the authors' best judgement.

It is pointed out that the consequences of introducing a particular policy option in Virginia would depend in large measure on the specific provisions of Virginia statutes, the political atmosphere, institutional resources, and many other circumstantial factors. Furthermore, since many variations of each policy option are possible, it is also pointed out that an option designed specifically for Virginia might differ significantly in some or all of its characteristics from any of the options described generally in the report.

TABLE 3. LIKELY IMPLEMENTATION REQUIREMENTS FOR POLICY OPTIONS

POLICY OPTIONS	REQUIREMENTS		
	Likely to Require New Enabling Legislation	Likely to Require Funding from General Public Sources*	Likely to Impose Costs Directly on Industry
Fee Systems	X		X
Tax Adjustments	X	X	
Bonds	X		
Definitional Exclusions	X		
Permit Exclusions	X		
Fast-Track Permitting	X	X	
Insurance Requirements	X		X
Regulatory Controls	X		X
Public Ownership/Operation of TSD Facilities	X	X	
Research & Development	X	X	
Waste Exchange			

*Incidental administrative costs excluded.

Finally, having drawn attention to the fact that it was not within the scope of the report to *recommend* particular policy options for possible adoption in Virginia, the chapter concludes with some important considerations that might be kept in mind by state policy-makers. These considerations relate to:

1. The issue of how strong a stand the Commonwealth might wish to take in encouraging the use of alternatives to land disposal;

2. The fact that incentive strategies encourage particular outcomes but do not require them, whereas command strategies act more directly in forcing desired outcomes;

3. The possibility of encouraging a counterproductive outcome (i.e., illegal dumping) by raising the costs of controlled treatment/disposal for hazardous waste generators;

4. The issue involved in possibly providing a public subsidy for hazardous waste management; and

5. The fact that, since many of the policy options are not mutually exclusive, it might be advantageous for the Commonwealth to adopt a combination of options.

APPENDIX C

SENATE JOINT RESOLUTION NO. 33

Requesting the Executive Director of the Solid Waste Commission to serve as the legislative liaison with the United States Department of Energy on matters concerning the siting of high-level radioactive waste depositories.

Agreed to by the Senate, February 8, 1984
Agreed to by the House of Delegates, February 23, 1984

WHEREAS, the Nuclear Waste Policy Act of 1982 directs the United States Department of Energy to develop and initiate a process for identifying potential sites for the disposal of high-level radioactive waste; and

WHEREAS, this legislation also encourages the states to become involved in this siting process; and

WHEREAS, state involvement can include consultation during all phases of planning, siting, developing, and operating such repositories; and

WHEREAS, Virginia is one of the states under review as a possible location for a high-level waste repository site; and

WHEREAS, this issue is of great import to the citizens of this Commonwealth; and

WHEREAS, it is important that members of the General Assembly, the elected representatives of these citizens, be kept fully informed of, and participate in, all facets of this process; and

WHEREAS, the provision of a legislative liaison will assist the General Assembly in participating in this process; and

WHEREAS, federal funds are available to support these liaison activities; now, therefore, be it

RESOLVED by the Senate of Virginia, the House of Delegates concurring, That the Executive Director of the Solid Waste Commission is requested to serve as the legislative liaison with the United States Department of Energy on matters concerning the siting of high-level radioactive waste depositories, pursuant to the terms of the Nuclear Waste Policy Act of 1982, serving both the Senate and the House of Delegates; and, be it

RESOLVED FURTHER, That the Executive Director is requested to coordinate her work with the executive branch of state government; and, be it

RESOLVED FURTHER, That the Executive Director is requested to seek federal funding to support these activities; and, be it

RESOLVED FINALLY, That the Executive Director, through the Solid Waste Commission, shall report annually to the Governor and General Assembly on activities undertaken by her pursuant to this resolution.

APPENDIX D

Municipal Responses to Questionnaire on Refuse Management

REFUSE MANAGEMENT BY JURISDICTION, 1984
(Responses to Division of Energy Questionnaire)

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Albemarle Co. Office of Co. Engineer 401 McIntire Rd. Charlottesville, VA 22901-4596	55,783	740	Ivy Landfill 300 1,600 (Ivy Landfill includes Charlottesville MSW)	50 (Keene Landfill)	2,500 83,000	890	760 City
Appomattox River Water Authority 21300 Chesdin Rd. Petersburg, VA 23803	N/A----------		None (Dumpster Pick-up --6CY/week)	N/A----------			
Arlington County Utilities Service Division P. O. Box 809 Arlington, VA 22216	153,200	25.8	County operates a transfer station and hauls waste to the I-95 landfill in Lorton, VA	2,635	137,000	1,735	900
Augusta County Board of Supervisors P. O. Box 448 Staunton, VA 24401-0351	53,700	986	August County Landfill-213.334 acres operated by the Augusta Co. Service Authority serving Augusta Co. and the City of Staunton	971.6 (City of Staunton uses Augusta Co. Landfill No. 1)	50,521	632	154 Co. of Augusta (Boxes/private Haulers) 174.5 City of Staunton
Bath County County Engineer Warm Springs, VA 24484	6,000	545	Bath Co. operates a trenched/covered landfill on 43-acre site near Hot Springs, VA. Two-man operation. Private contracted "Green Box" collection system.	300 cu.yds./wk compacted in collection trucks	15,600 cu.yds/wk	Total	

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Brunswick County P. O. Box 399 Lawrenceville, VA 23868	15,632	579	None	440	22,880		440
Campbell County Board of Supervisors P. O. Box 100 Rustburg, VA 24588	45,424 (1980 Census)	512	One Central Solid Waste Disposal Facility Seven Transfer Sites 160 acres, Trench Type operated by County	660 (estimate)	34,300 (estimate)	624	36 (municipal) (Altivista-24tpw) (Brookneal-12tpw)
Caroline County Co. Administrator P. O. Box 507 Bowling Green, VA 22427	18,200	529 (120 sq. miles of total comprises the Fort A. P. Hill Military Reservation.)	Sanitary Landfill, County owned and operated.	135.1	7,044.5	Unavailable----------	
Carroll County Co. Administrator's Office P. O. Box 515 Hillsville, VA 24343	27,270	474	Size of Sanitary Landfill is 75.82 acres. The current operator is Rhudy Lineberry, Contractor. Owned by the County.	225 approx.	11,700 approx.	C&M Carting Co., Elk Creek, VA	Town of Hillsville/ municipal
Charlottesville City-Public Works Dept. City Hall Charlottesville, VA 22902	39,916 (1980 Census)	10.442	Type - Landfill Size - 303 acres Operator-Charlottesville Location-Albemarle Co. (Ivy, VA)	1,044 (FY 84)	59,267		1,044 (municipal)

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ municiple
Chesterfield Co. Dept. of General Services P. O. Box 40 Chesterfield, VA 23832	167,100	450	Chester Sanitary Landfill, 57 acres owned by the Co. and operated by Shoosmith, Inc. Shoosmith also operates: 1 MSW landfill 1 Sludge & Paper Landfill 1 Inert Debris Landfill Total of 200 acres	3,000	156,000	2,900	80
			Disposal Operations (cont'd) Southern Landfill: 75 acres (opens 1985) Northern Landfill: 65 acres, County owned, operated operated by Walter C. Link, Inc.				
Clarke County Board of Supervisors P. O. Box 169 Berryville, VA 22611	10,000	174	No Response----------				
Colonial Heights City Bldg. Inspections 1507 Boulevard Colonial Heights, VA 23834	17,500	8.15	The City is under contract with B.F.I. for refuse collection and Shoosmith, Inc. Disposal Service for disposal. The disposal operation is privately owned and in Chesterfield County.	662 cu.yds.	34,438 cu.yds.	B.F.I.	None
Craig County Office of the Co. Administrator New Castle, VA 24127	3,948	366	Not available----------				None

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Culpeper County 135 W. Cameron Street Culpeper, VA 22701	22,620	389	County Landfill	500	25,000	B.F.I. Community Trash	Municipal (Town)
Daleville City Dept. of Public Works P. O. Box 3300 Danville, VA 24543	45,642	19.09	Site for City of Danville Landfill, owned and operated by the City of Danville	1,425	75,000	893	532
Dinwiddie County Co. Administrator's Office P. O. Box 266 Dinwiddie, VA 23841	22,000	500.54	Dinwiddie Co. Landfill: Location-off Rt. 645: Size-78 acres (20 acres currently in use with 30 acres of suitable land remaining)	220	11,440	N/A	220
Emporia City P. O. Box 511 Emporia, VA 23847	5,000	2.3	Joint Facility with Greensville County	82	N/A		100% City
Essex County Co. Administator P. O. Box 1079 Tappahannock, VA 22560	8,864	264	County operated landfill	540 cu. yds.	28,080 cu. yds.	None	Essex County Town of Tappahannock

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Fairfax County Office of Co. Executive The Massey Bldg. 4100 Chain Bridge Road Fairfax, VA 22030	670,000 (includes the Cities of Fairfax & Falls Church)	400	I-66 Transfer Station, Co. owned & operated, 1200 tpd received & transferred I-95 Landfill accepts 1700 tpd.	12,571 (Solid waste tonnages include Cities of Fairfax & Falls Church & the Towns of Herndon & Vienna.)	653,709	8,333	2,727
Fauquier County Board of Supervisors 40 Culpeper St. Warrenton, VA 22186	38,000	660	40 acre landfill operated by private contractor. 5 county container/ compactor sites.	442 (Includes Town of Warrenton)	23,000	250	192
Floyd County P. O. Box 88 Floyd, VA 24091	11,700	383	55 acre sanitary landfill located next to Floyd Town dump (5 acres); 20 year expected life in 1972.	384	20,000		545 (Floyd Co.)
Frederick Co. P. O. Box 601 9 Court Square Winchester, VA 22601	60,000 (Total all Jurisdictions)	427 (Frederick Co. only)	167 acres - Frederick Co. Operator	1,293	67,252.92		26,901.17
NOTE: SOLID WASTE FACILITIES SERVE FREDERICK, CLARKE CO, & CITY OF WINCHESTER							
Gloucester Co. P. O. Box 329 Gloucester, VA 23061	25,500	223	One Landfill, Rt. 17 across from airport 53 acres Hugh Soles, Operator	73 (average)	3,800 (average)		ARS-Waste Management

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Goochland Co. Office of Co. Administrator P. O. Box 10 Goochland, VA 23063	12,200 (1983)	289	Public Landfill; Rt. 632; Goochland County	30+	1,560+	5-8 Private Contractors, plus the General Public	0
Halifax County Board of Supervisors P. O. Box 786 Halifax, VA 24558-0786	30,000 (approx.)	800 (approx.)	Green Box pickup taken to Co. Landfill; owned & operated by Co.; 141 acres; Over past 12 yrs., 12 acres used approx. 1 acre/year.	Unknown----------			Co.-about 62,400 uncompacted cu. yds. annually. Town of Halifax-unknown.
Hanover County Hanover Courthouse Hanover, VA 23069	52,000	471	Rt. 301 Landfill, 35 acres, operated by Hanover County	460	26,000	240	260
Henrico County Dept. of Public Utilities P. O. Box 27032 Richmond, VA 23273	184,000	234	Henrico operates 2 sanitary landfills B.F.I. operates 1 sanitary landfill.	Info. on collection not available. Disposal at Henrico landfills is approx. 400 tpd total or 200 tpd each.		2,200	200
Highland Co. Dept. of Buildings & Zoning Office of the Administrator P. O. Box 188 Monterey, VA 24465	2,600	416	Highland Co. Landfill; Rt. 621, High land Co, Monterey, Va; Operated by Highland Co. Board of Supervisors			None	Highland Co. Board of Supervisors

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Hopewell City Engineering Dept. Municipal Bldg. 300 N. Main St. Hopewell, VA 23860	23,397	11.3	Municipal Landfill	452	23,500	Browning-Ferris Industries (contracted)	
Isle of Wight Co. Office of the Administrator Isle of Wight Courthouse Isle of Wight, VA 23397	22,200	319	No Response	210	10,960	Half (105)	Half (105)
James City Co. P. O. Box JC Williamsburg, VA 23187-3627	27,450	181	Co. Landfill approx. 430 acres owned & operated by the County	693	36,135	693	0
King George Co. Co. Administrator P. O. Box 169 King George, 22485	11,000	176	Co. Landfill; 45 acre site	300	15,000	200 tpw private 50 tpw Fed. Government. 50 tpw private vehicle.	None
King William Co. Board of Supervisors King William, 23086	9,600	278.1	Sanitary Landfill, 16 acres, operated by the County. 2 Transfer sites: #1-3 acres-4 40CY roll-off containers. #2-3 acres-2 40CY roll-off containers.	Unknown----------			

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Lynchburg City	66,743	50	Municipal Landfill	1,367 (Fill on cubic yard basis, converted to ton by use of average 200lb./cubic yard.)	71,063	1,024	343
Manassas City Public Works Department 9027 Center St. P. O. Box 512 Manassas, VA 22110	18,000	12.2	Prince William County Landfill	140	7,280	Armada, Inc.	N/A
Montgomery Co. Co. Administrator P. O. Box 806 Christiansburg, VA 24073	63,500	395	No Response	750 (est.)	39,000	500 (est.) Bob's Refuse, Fred Franklin, Carolina Waste, Cycle Systems, Others.	216 (est.) County
Newport News City Dept. of Public Works 513 Oyster Point Road Newport News, VA 23602	146,300	69	New Denbigh Landfill; City owned & operated.	2,495	129,740	1,546 tons per week private & commercial (private businesses & City of Newport News	949 tons per week municipal
Orange County P. O. 111 Orange, VA 22960-0800	18,063	355	No Response----------				

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Northumberland County Board of Supervisors Heathsville, VA 22473	10,000	223	Approx. 70 acres located on State Rt. 601 near Lara used jointly by Lancaster, Northumberland & Richmond Counties. Operator-Robert E. Headley, Callao, VA	N/A----------			Towns of Warsaw & Kilmarnock
Prince William County 14811 Dumfries Rd. Manassas, VA 22110	163,000	355.37	County Landfill, 280 acres owned & operated by the Co. using area method.	2,532 (Data for FY 1984)	131,656	2,532	0
Radford City Municipal Bldg. 619 Second Street Radford, VA 24141	13,700	8.1	No Response	192	9,984		City of Radford, VA
Richmond City Dept. of Public Works 900 E. Broad Street Richmond, VA 23219	217,600	62.5	2 Transfer stations. Each has 2 hoppers.	2,500 approx.	102,605 approx.	500 approx.	2,000 approx.
Roanoke City Roanoke Co. Town of Vinton	210,000	268	Type-Regional Landfill Size - 214 Acres Location-Intersection of State Rts. 618 & 658 Operator-Solid Waste Management Board	3,250	131,694	1,226	2,024

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Roanoke Co. Dept. of Public Facilities Utilities Division P. O. Box 3800 Roanoke, VA 24015	76,280 (includes Town of Vinton)	251.48	Roanoke Valley Regional Landfill Type: Landfill Location: SE Roanoke Co. Size: 273 acres Used by Roanoke City, Roanoke Co. & Vinton.	365	18,980 (By County Trucks)	Cycle Systems, Inc. (Dumpster Containers only)	365 (Roanoke County)
Scott County Board of Supervisors 112 Water St. Suite 1 Gate City, VA 24251	25,068	549	Scott Co. Landfill	180	9,360	Mr. Trash, 18	Scott Co. 150 Town of Gate City 12
Shenandoah Co. Dept. of Public Works P. O. Box 452 Woodstock, VA 22664	27,559	507	26 acre Sanitary Landfill; engineering study being completed on adjacent 187 acres for use as landfill.	600	31,200	360	240
Staunton City P. O. Box 58 Staunton, VA 24401-0034	22,000	9.0+	City uses Augusta Co. Service Authority Landfill.	185	10,000	0	185
Surry County Board of Supervisors Surray, VA 23883	6,046	306	Landfill-20 acres County	No response----------			Surry Co.

Responding Jurisdiction	Current Population	Land Area (Sq. Miles)	Disposal Operations	Tons of MSW w/in Jurisdiction (tpw)	(tpy)	Haulers of Waste tpw private	tpw county/ munuciple
Tazewell Co. Administration Building 315 School St. Box 2 Tazewell, VA 24651-1389	50,511	510.7	No Response	400 est.	28,800 est.	150 est.	250 est.
Waynesboro City Public Works P. O. Box 1028 Waynesboro, VA 22980	15,600	7.45	Municipal Sanitary Landfill, owned by the City		30-50 est.	15-20 est.	25-30 est.
Winchester City Rouss City Hall Winchester, VA 22601	21,000	9.1	No Response----------				
Wise County Office of Co. Administrator Courthouse P. O. Box 570 Wise, VA 24293	44,500	415	No Response	1,720	89,400	516	1,204
York County P. O. Box 532 126 Ballard St. Yorktown, VA 23690	37,807	108	County Landfill	300	15,500	Commercial Haulers	None