ANNUAL REPORT OF THE

Virginia Recycling Markets Development Council

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 10

COMMONWEALTH OF VIRGINIA
RICHMOND
2001

1999 – 2000 RECYCLING MARKETS DEVELOPMENT COUNCIL

APPOINTEES	REPRESENTING
Richard S. Weber	*Chairman, VRMDC 1999* Virginia Association of Counties
John M. Carlock	*Chairman, VRMDC 2000* Urban Planning District
Edward A. Duffy	Plastics Industry
Michael Benedetto	Paper Industry
Vacant	Solid Waste Collection Industry
Diane L. Jones	Rural Planning District
Richard M. Lerner	Scrap Metal Industry
Betty H. Boswell	Glass Industry
Andrew T. Carrington	Citizen Member
Robert J. Kerlinger, Jr.	Organic Waste Industry
John H. Mitchell	Recycling Industry
Douglas C. Wine	Virginia Municipal League
Grady A. Wood	Oil Industry
Vacant	Tire Industry
Vacant	Aluminum Industry
STATE AGENCY	
A. Georgiana Ball	Department of General Services
William R. Bailey III	Department of Transportation
Michael P. Murphy	Department of Environmental Quality
Will Vehrs	Department of Business Assistance

1999 REPORT OF
THE VIRGINIA RECYCLING MARKETS DEVELOPMENT COUNCIL

TO: The Honorable James S. Gilmore, III
And
The General Assembly of Virginia

The Virginia Recycling Markets Development Council, established by the General Assembly in 1993, is directed by statute (Section 9-145.47, Code of Virginia) to develop and monitor the implementation of a plan to strengthen Virginia's recycling infrastructure and markets by improving the supply and quantity of recyclables available, expanding the capacity of collectors, processors and manufacturers to handle and use secondary materials, and developing strategies to increase the use of specific materials.

In carrying out the charge that the General Assembly provided to the Council, the Council is to undertake the following activities:

A.

1. Promote and coordinate state agencies' and authorities' efforts to enhance markets for recycled or recovered materials.

2. Promote the purchase of products made from recycled or recovered materials.

3. Identify and evaluate financial and other incentives that may attract new businesses that can use recycled or recovered materials generated in Virginia.

4. Identify barriers to the development of markets for recycled material, including existing state policies, regulations and procedures, and recommend alternatives to overcome such obstacles.

5. Develop recommendations for the establishment of a regional or interstate marketing system for recycled materials.

6. Encourage the use of uniform recycling definitions and standards throughout the state.

7. Promote and encourage public/private market development initiatives.

8. To report annually its findings and recommendations to the Governor and the General Assembly; and

9. To determine the volume of materials by varying categories or commodities which is being recycled in the Commonwealth and to report its findings in its 1998 report. The Council shall investigate the frequency of situations in which, because of market conditions or other factors, materials collected for recycling are otherwise disposed of, and determine measures to avoid the recurrence of such situations. The Department of Environmental Quality (DEQ) shall provide staff to the Council for the purposes of this subdivision and shall cooperate with the Council in the preparation of the report.

B. The Council shall develop and monitor the implementation of a plan to strengthen Virginia's recycling infrastructure and markets which (I) improve the supply and quantity of recyclables available; (ii) expand the capacity of collectors, processors, and manufacturers to handle and use secondary materials, and (iii) incorporate strategies to increase the use of specific measures.

INTRODUCTION

The legislation, establishing the Virginia Recycling Markets Development Council requires the Council to report annually to the Governor and the General Assembly on its findings and recommendations. Since its inception, the Council has attempted to complete its reporting on a Calendar Year basis. This frequently means that data on the status and health of the recycling industry is not available in a timely fashion for the Council's consideration. Also, Calendar Year reporting is frequently complicated by the annual changeover in Council officers and every four years in the transition of the entire Council. To address these issues, which have complicated the Council's annual reporting, the Council believes that Fiscal Year reporting may be more appropriated. Therefore, to provide the necessary transition, this 1999-2000 Annual Report of the Virginia Recycling Markets Development Council covers an eighteen-month period. Future Annual Reports will be prepared on a Fiscal Year basis.

1999-2000 ACTIVITIES OF THE COUNCIL

MEETINGS

The Council met several times during the course of the year. Meetings, held on March 9, 1999, May 11, 1999, September 14, 1999, March 14, 2000 and May 9, 2000, were held in the Conference Room of the Central Virginia Waste Management Authority, Interstate Center, 2104 West Laburnum Avenue, Richmond, Virginia. The November 10, 1999 meeting was held in conjunction with the annual Virginia Recycling Association conference, held in the conference center of the Woodlands Resort, 102 Visitor Drive, Williamsburg, Virginia. Overviews of these meeting are as follows:

March 9, 1999 Quarterly Business Meeting

The Council lacked a quorum for this meeting and did not take any action. The Council received a status report on, and discussed several aspects of, the 1998 annual report. There was status report given by a sub-committee on various meetings held with various state agencies to ascertain the need for a permanent statewide recycling coordinator position. The sub-committee reported that meetings had been completed with the Department of Environmental Quality, The Department of Business Assistance and The Department of General Services. It was recommended that the Council continue to go forward with the idea. This work should consist of refining the position description and placement within the State personnel system.

Mr. Doug Gibboney, representative of the Glass Packaging Institute, presented information on opportunities and constraints for glass recycling. He noted that the current rate of recycling of glass in Virginia is 35%. The industry would like to see that rate raised to 45%. He also noted that the plastics industry has taken over much of the drink bottle markets, including the introduction of the plastic beer bottle, which is not recyclable. He asked that the Council take a position not to support markets that produce non-recyclable materials.

May 11, 1999 Quarterly Business Meeting

The Council decided to hold the last quarterly meeting of the year in November in conjunction with the Virginia Recycling Association Annual Conference. The goal of such a coordination of meetings would be to explore common goals that the two groups might be able to more successfully work on cooperatively.

The Council received a legislative update on the 1999 General Assembly Session from Cathy Frahm, Legislative and Policy Analyst from the Department of Environmental Quality. Ms. Frahm noted that there was no legislation dealing specifically with recycling. She briefed the Council on HJ536, HB 2557, SB 1309, Appropriations Act 431 HJ 668 and HB 2881.

The Council hosted a panel discussion on the opportunities for and barriers to the composting industry. Included on this panel were, Dr. Greg Evanylo, Virginia Polytechnic Institute and State University; Bill Stinson, Grind-All; Tim Hutchinson, Loudon Composting; Tommy Davis, Virginia Department of Corrections; Mike Dieter, Virginia Department of Environmental Quality. An overview of the industry was given. Several panel members explained their operations. The panel presented their concerns which included the costs associated with composting, the time line to receive a permit, and the regulations which must be followed. Presentation support materials handed out to the Council are included as Appendix A. DEQ representatives noted that many of the issues could be appropriately addressed in the on-going revision of the Virginia Solid Waste Management Regulations.

The Council conducted final discussions and amendments to the draft 1998 Annual Report.

September 14, 1999 Quarterly Business Meeting

The Council approved the final draft of the 1998 Annual Report and directed that it be forwarded to the General Assembly for distribution. Council moved final approval of the concept of a permanent statewide recycling coordinator position and established an ad hoc subcommittee to finalize a job description for submission to the Governor. Council continued its May discussions on barriers to the composting industry and directed that a letter be forwarded to the Secretary of Natural Resources outlying the concerns of the industry.

Ms. Stacey Demers, Recycling Coordinator, Loudon County made a presentation on the need for standardization in calculating recycling rates. She reviewed the EPA's method of calculating rates and materials allowed in such calculations. Ms. Demers reported that Maryland, as well as the Northeastern Recycling Council, has been compiling two similar but different reports using the EPA methodology as well as the individual state's methodology. The Council suggested that Ms. Demers give her presentation at the joint November meeting with the Virginia Recycling Association. Council generally supported standardization and moved to continue to study the idea including soliciting input from the VRA membership in November.

November 10, 1999 Quarterly Business Meeting

The Council conducted the quarterly meeting in conjunction with the annual conference of the Virginia Recycling Association. VRA membership actively participated in the joint meeting and many favorable comments were received regarding pursuit of mutual goals. Standardization of recycling rate calculation and reporting was the primary topic of discussion. Council officers for Calendar Year 2000 were elected.

March 14, 2000 Quarterly Business Meeting

The Council approved the position description for the Recycling Market Development Specialist and directed that the Chairman forward it to the Governor with a request for authorization and funding (copy of letter included in Appendix B. Council received a presentation from DEQ staff regarding the upcoming review process for the regulations governing Solid Waste Management Plans including recycling reporting. DEQ staff also presented a legislative overview of the 2000 General Assembly session.

May 9, 2000 Quarterly Business Meeting

The Council reviewed the preliminary draft of the 1999 Annual Report, as presented by the Annual Report Subcommittee. Following discussion, which included a number of recommendations for changes to the Annual Report, the Council approved the Report, subject to review of the final Report and concurrence of Council members with the final Annual Report through a Letter Ballot. (The final draft Annual Report was ultimately approved by letter ballot in late June, subject to additional modifications.)

The Council approved letterhead and logo, designed by the staff of the Hampton Roads Planning District Commission for the Council.

The Council received briefings from:

1. Representatives of the Northern Virginia Planning District Commission on its study, Virginia Used Oil, Filter and Antifreeze Consumer Management Study. The Executive Summary of the Study is included in Appendix C.
2. Representatives of the Department of Environmental Quality on the deliberations of the DEQ Technical Advisory Committee, which was addressing the State's Solid Waste Management Planning Regulations.
3. Representatives of the Mid-Atlantic Consortium of Recycling and Economic Development Officials (MACREDO) on a proposed grant to support MACREDO's activities.

Based on these presentations, the Council requested that it be provided with copies of the legislation, which had been introduced to implement the NVPDC study's recommendation, a briefing on the status of the related ongoing legislative studies; and endorsed the grant application being submitted by the Institute for Local Self Reliance on behalf of MACREDO.

During the course of its Quarterly Business Meetings, the Council heard presentations from individuals, agencies and businesses on the status of recycling in Virginia. Reflecting the perspective of the presenters, these presentations addressed specific market components, local and regional

recycling program experience and innovative activities, which have the potential to increase the market for specific recyclable materials.

SUBCOMMITTEES

In 1998, the Council established a Subcommittee to meet with the various state agencies charged with some aspect of recycling to quantify the need for the position of State Recycling Market Development Specialist and to determine under what state department such a position should be placed. This Subcommittee completed its work and reported at the March 9, 1999 meeting of the Markets Development Council that meetings had been completed with the Department of Environmental Quality, The Department of Business Assistance and The Department of General Services. It was recommended that the Council continue to go forward with the idea. This work should consist of refining the position description and placement within the State system.

The Council subsequently established a Subcommittee to develop a position description for a permanent statewide recycling coordinator position. The Subcommittee completed its work and recommended the Position Description to the full Council at its March 14, 2000 Meeting. The Council approved the Subcommittee's recommendation and requested that the Governor establish the position of State Recycling Market Development Specialist.

During 2000, the Council established two Subcommittees. The first Subcommittee was charged with developing the Council's Annual Report for 1999-2000. The second Subcommittee was charged with working with the Virginia Recycling Association, Virginia Waste Industries Association, Solid Waste Association of North America and others, to evaluate the potential standardization of the recycling rate methodology. This Subcommittee was to develop recommendations on rate standardization for consideration during the state process to develop Amendment No. 1 to the State's Solid Waste Management Planning Regulations. Due to overlapping membership with the DEQ Technical Advisory Committee, the Subcommittee did not meet.

REGULATORY PARTICIPATION

August 8, 1999 Waste Management Board Meeting

Council Vice Chair Mitchell presented the 1998 Annual Report to the Virginia Waste Management Board and provided supplemental information to the Board on Council activities.

State Solid Waste Regulations Technical Advisory Committee

In December 1999, the Virginia Waste Management Board issued a Notice of Intended Regulatory Action concerning proposed amendments to the

State's Solid Waste Management Planning Regulation. Council Chair Carlock advised the Waste Management Board and the Department of Environmental Quality of the Council's interest in the proposed regulatory changes. Subsequently, the Department of Environmental Quality requested Council Chair Carlock to represent the Council on its Technical Advisory Committee. Other Council members also served on the Technical Advisory Committee as representatives of their organizations or industries. The Council anticipates providing formal comments to the Virginia Waste Management Board at such time as the Regulations are released for public review and comment.

PRESENTATIONS

During the course of its deliberations during 1999, the Council received presentations from several organizations and individuals on recycling programs and issues.

The Glass Packaging Institute

Mr. Doug Gibboney showed a videotape on glass recycling. He stated that the current rate of recycling of glass in Virginia is 35%. The industry would like to see that rate raised to 45%. He also noted that the plastics industry has taken over much of the drink bottle markets, including the introduction of the plastic beer bottle, which is not recyclable. He asked that the Council take a position not to support markets that produce non-recyclable materials.

Department of Environmental Quality

Ms. Kathy Frahm, Legislative and Policy Analyst from the Department of Environmental Quality reported on legislative actions taken during the 1999 Session of the General Assembly. She stated that no legislation dealing specifically with recycling had been enacted. She briefed the Council on HJ536, HB 2557, SB 1309, Appropriations Act 431 HJ 668 and HB 2881.

Panel on the Composting Industry.

Included on this Panel were, Dr. Greg Evanylo, Virginia Polytechnic Institute and State University; Bill Stinson, Grind-All; Tim Hutchinson, Loudon Composting; Tommy Davis, Virginia Department of Corrections; Mike Dieter, Virginia Department of Environmental Quality. An overview of the industry was given. Several panel members explained their operations. The panel presented their concerns which included the costs associated with composting, the time line to receive a permit, and the regulations which must be followed. Presentation support materials handed out to the Council are included as Appendix A.

Standardization of Recycling Rate Reporting

Ms. Stacey Demers, Recycling Coordinator, Loudon County, made a presentation on the standardization of localities calculating recycling rates. She covered in depth the EPA's method of calculating. Ms. Demers reported that Maryland, as well as the Northeastern Recycling Council, has been compiling reports in two formats, using the EPA methodology as well as the individual state's rate. The Council suggested that Ms. Demers give her presentation at the joint November meeting between the Virginia Recycling Association and the VRMDC. Her presentation was repeated at the joint meeting and was well-received.

Solid Waste Planning Regulations

At its meetings on March 14, 2000 and May 9, 2000, the council received briefings from staff at the Department of Environmental Quality on the process to amend the State Solid Waste Management Planning Regulations, which include the regulations establishing the state's recycling goals. DEQ staff indicated that a Technical Advisory Committee, which included several Council representatives, had been established to advise on the development of these regulations. At the May 9, 2000 meeting, DEQ staff advised the Council of the status of the regulatory amendment process. It was indicated that a recommendation would be presented to the Virginia Waste Management Board at its June 2000 meeting. The revisions would establish a process for updating and amending local and regional solid waste plans. It was expected that they would include changes to the reporting format for recycling, which would bring the state and EPA methodologies into closer conformity.

Used Oil, Filter and Antifreeze Study

At the Council's May 9, 2000 meeting, representatives of the Northern Virginia Planning District Commission briefed the Council on its study, entitled "Virginia Used Oil, Filter and Antifreeze Consumer Management Study," completed in 1999. A copy of the Executive Summary of this study is included in Appendix C.

MACREDO

Council Member Will Vehrs of the Department of Business Assistance briefed the Council on the Mid-Atlantic Recycling and Economic Development Officials (MACREDO) organization at the Council's May 9, 2000 meeting. This briefing was provided at the request of Chairman Carlock for the benefit of several Planning District Commissions, who were represented at the meeting. The PDCs were reviewing a grant application, being submitted on behalf of MACREDO, to support its activities during Fiscal Year 2000-2001. It was reported that activities include public outreach on post-consumer recyclables, work on issues such as composting and yard wastes, semi-annual conferences, maintenance of the organization's web page, and exchange of information on

recycling and related economic development activities within the member states. The Council acted to endorse the grant application. A copy of the endorsement letter is included in Appendix D.

STATE AGENCY INITIATIVES

DEPARTMENT OF BUSINESS ASSISTANCE

The Department of Business Assistance (DBA) continued its efforts to support the creation and nurturing of businesses in the recycling sector, as well as assisting existing companies in other sectors to increase or improve their recycling programs. During 1999, twenty-seven (27) Virginia companies received direct assistance with recycling questions or problems from DBA Project Managers in the Existing Industry Development Division. Forty-four (44) companies or individuals making inquiries regarding Virginia's Recycling Tax Credit received literature regarding the credit. The Department of Business Assistance representative to MACREDO (The Mid-Atlantic Consortium of Recycling and Economic Development Officials) was an active participant in regional activities, elected by peers as vice-chairman and making numerous electronics recycling presentations on behalf of the organization. A major initiative in progress at the Department of Business Assistance is an improved Business-to-Business Website function, which would benefit both generators and recyclers by allowing them to find each other and to facilitate business partnerships.

DEPARTMENT OF ENVIRONMENTAL QUALITY

During 1999, the Department of Environmental Quality (DEQ) continued its administration of the annual grant program of the Litter Control and Recycling Fund. For the grant cycle beginning on July 1, 1999, the Fund balance was approximately $2.1 million. Of this amount, seventy-five (75) percent ($1,497,800) was made available to local governments and regional organizations for implementing their litter prevention and recycling programs. Another twenty (20) percent ($367,000) was awarded through grants for statewide or regional educational programs about litter prevention and recycling.

On the legislative front, DEQ was directed to prepare a report for the 2000 General Assembly identifying funding sources available to small businesses to assist in the development of technologies to eliminate the scrap tire problem in Virginia (HJ 536). The report (House Document No. 30) identified 16 separate state or federal sources that could provide financial assistance packages up to $10 million for individual projects. Second, DEQ provided administrative oversight to the General Assembly authorized study on used oil and antifreeze recycling by the Northern Virginia Planning District Commission. The study provided a snapshot of existing used oil and antifreeze recycling options in the Commonwealth with recommendations on methods to increase the dynamics of

Virginia's programs to capture more of this material. Third, HB2557 and SB1309 directed DEQ to complete a comprehensive analysis of solid waste management in the Commonwealth and to make recommendations. The interim report was due by December 21, 1999 (Senate Document No. 32) with the final report due 7/1/00. DEQ continues to report by June 30 of each year to the General Assembly on the Commonwealths solid waste generation and management by waste type and on the disposition and source of the solid waste. This information is gathered from permitted solid waste facilities in the Commonwealth through DEQ's Solid Waste Information and Assessment Program.

In 1999, DEQ opened its solid waste regulations to public comment and review (Notice Of Intended Regulatory Action) on issues such as solid waste management plans for local governments (including recycling reporting guidelines) and composting. The regulations will be modified to reflect statutory changes, federal legislative and regulatory changes, and the Technical Advisory Committees' and public comments on the specific topic of the regulations. This activity will continue through calendar year 2000 when the proposed regulations will be presented to the Virginia Waste Management Board for adoption.

DEQ continues its work with the Mid-Atlantic Consortium of Recycling and Economic Development Officials (MACREDO), an information exchange network and working group funded by an EPA grant. MACREDO is composed of EPA Region III states (Delaware, Maryland, West Virginia, Pennsylvania, and Virginia) and the District of Columbia. In 1999, DEQ staff attended MACREDO meetings in Harrisburg, Pennsylvania (May) and Shepherdstown, West Virginia (October).

DEPARTMENT OF GENERAL SERVICES

The Department of General Services filled the position of State Recycling Coordinator in February 1999. This position provides technical assistance, training and policy guidance to state agencies for their recycling and waste reduction programs and their procurement of materials made with recycled content.

More than 50 agencies were assisted with recycling issues or the reutilization of state surplus property. Training and resource materials provided in 1999 focused primarily on "Buy Recycled" efforts and included reviewing state policy and legislation concerning recycled-material procurement, purchasing strategies to increase such purchases, and program management for Buy Recycled programs. Workshops included a state purchasing conference and state recycling association annual meeting.

State agencies were surveyed to determine level of need and interest in utilizing statewide scrap material contracts for 11 materials such as scrap metal, wood pallets and computers. Work will continue next year on the development of material handling contracts for state agencies.

DEPARTMENT OF TRANSPORTATION (VDOT)

Virginia Department of Transportation (VDOT) has and continues to support recycling ideas and initiatives. The department is committed to using good sound quality materials in their construction projects. The department develops test methods for the evaluation of the engineering properties of various materials. Materials selected for incorporation into the highway infrastructure must meet minimum quality standards and be supplied in a uniform and economic manner.

The recycled materials that VDOT is and has used in construction are recycled asphalt and concrete from pavements and bridges, fly ash, slag, glass, shredded tires, guardrail offset blocks and concrete truck mix wash water. The materials that are recycled in VDOT's fleet operations around the state are used motor oil, antifreeze and batteries. Scrap metal such as guardrail, guardrail posts, bridge beams and light poles are sold to scrap metal dealers at auction.

The Virginia Transportation Research Council has developed a specification for asphalt roofing shingles. This specification will allow an asphalt producer to include a percentage of roofing shingles in an asphalt mixture. Asphalt producers at the present time recycle over a million tons of old asphalt pavement each year. Asphalt is one material that the highway industry considers 100% recyclable.

Concrete used in highway construction includes anywhere from 165 to 325 lbs. of ground granulated blast furnace slag or 125 lbs. of fly ash per cubic yard from steel mills or electric power generation plants respectively. A percentage of wash water from ready-mix concrete trucks cleanup is allowed as mix water in a concrete mix.

A complete research report on an experimental project, which involved the placement of over a million shredded tires in a roadway embankment, is due early next year. Preliminary results indicate that the project was a success.

MARKET UPDATE

STATUS OF RECYCLING

National

Recycling in the United States is supported by the fact that individual state governments have set recycling percentage goals for themselves. Included, as Appendix E in this report is a list of states along with their goals and deadlines to meet them.

A recent survey done by Jenny Heumann of **Recycling Times Magazine** assessed the status of State government efforts to meet their recycling goals. Highlights of that survey included:

- 15 states have recycling or waste reduction goals of 50 percent or higher. Rhode Island had the highest rate at 70%.
- Six states – Arizona, Delaware, Idaho, Kansas, Utah and Wisconsin have not set recycling rates.
- Six states, Florida, Georgia, Illinois, Maryland, Oklahoma and Virginia reported having surpassed their recycling rates prior to their deadlines.
- States often differed in what materials they included in their recycling rate calculations leading to difficulties in a comparison analysis.
- Some states are changing the way they measure their recycling progress and are putting greater emphasis on waste reduction goals.
- Seven states now have a waste diversion and reduction goal rather than recycling goal.

States setting waste reduction goals say that to measure the total success of a waste minimization program, they need to measure the change in the waste disposed – landfilled – incinerated – not just materials recycled.

The evaluation of recycling programs is a complex issue, and methods of calculation vary greatly from location to location and industry to industry. One issue is the lack of uniformity of reporting on rates of recycling and disposal. This makes accurate analyses and market predictions for a given area, and comparisons between areas, difficult.

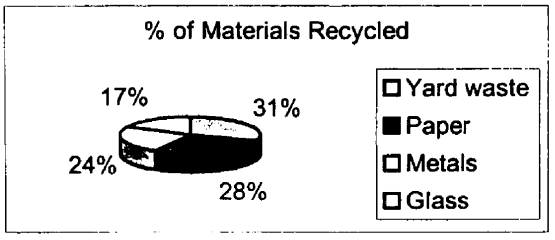
The Environmental Protection Agency, (EPA) has developed a standardized methodology for reporting of recycling data. The Department of Environmental Quality provided the Council with copies of the EPA report, Managing Recycling: A Guide for State and Local Governments, (September 1997, EPA Document # EPA530-R-97-011), which covers the subject. The Council also received a presentation by Ms. Stacey Demers, Recycling Coordinator, Loudon County, which covered in detail the EPA standardization methodology. It is the desire of the Council to assess and forward recommendations to the Department of Environmental Quality in this area during the upcoming Solid Waste Planning Regulations review.

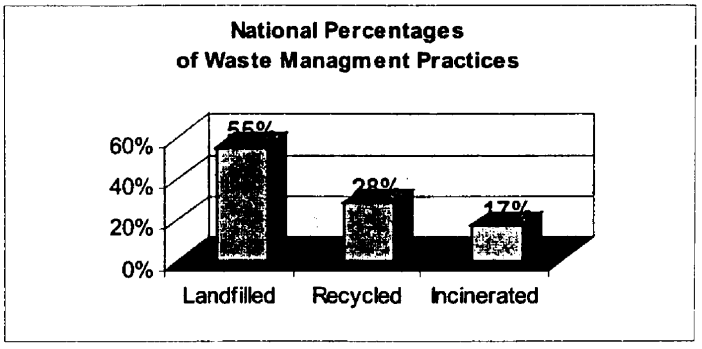
The EPA Office of Solid Waste in Washington recently published a 12-page fact sheet, which covered the following statistical data.

National Recycling Rates

1960	1980	1990	1998	2005 (EPA Goal)

6.4%	9.6%	14.2%	28.2%	35%





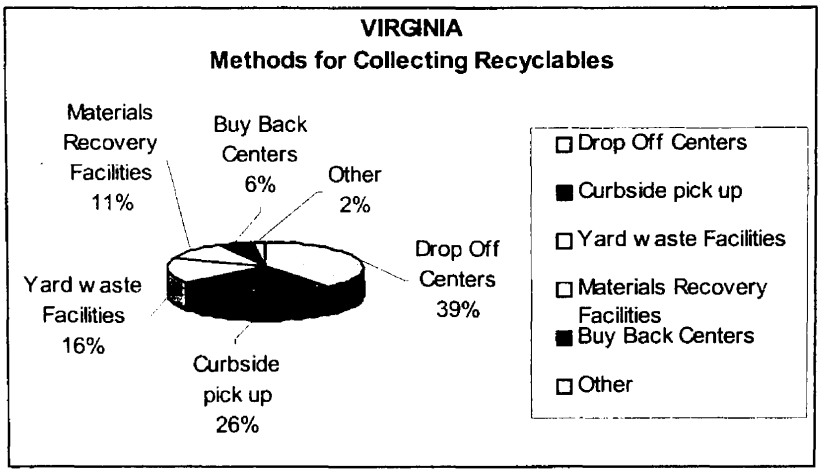
*Packaging is believed to comprise 33% of the total solid waste stream.

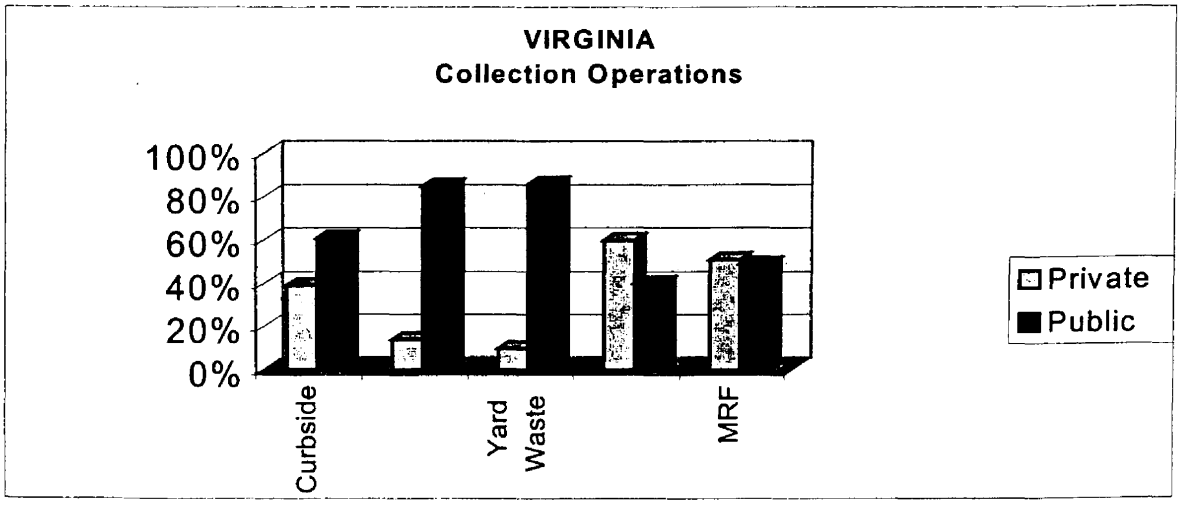
You can access the report in its entirety by going to the web at http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm

Virginia

Many strong programs and expanding community collection systems have kept recycling afloat. Notable in the collection area is the trend to receiving recyclables at the curb co-mingled. This has brought about cost savings both in labor and equipment.

A report, published by Draper-Aden entitled "1999 Status of Solid Waste Management," presents an assessment of the waste stream recycling percentage rates that municipalities in the state have claimed to attain. This information is included as Appendix F. The survey also covered methods of collection of recyclables. The following charts were offered in the survey.





The Draper-Aden report also surveyed Solid Waste Managers as to what they considered to be the five most pressing issues facing them today. The *Cost of Recycling* and *Recycling Markets* were rated as the second and third most pressing issues.

GLASS

National

In 1998, the glass container recycling rate, as reported by the Glass Packaging Institute, was flat when compared to 1997 at 35%.

Recycled glass (cullet) must compete with virgin materials, such as sand, soda ash, and limestone, not only in price, but also more importantly in quality. It is for this reason that a higher quality cullet is used for new glass container production, while cullet contaminated with ceramics or mixed glass types and

colors are used for secondary applications. Due to the rapid growth of commingled and even in "single stream" curbside collection systems, excessive amounts of cullet that is only suitable for lower value secondary uses are being generated. While there is anecdotal evidence that more used glass containers are being collected in public and private collection systems much of it is unsuitable for "closed loop" recycling into new glass containers.

Virginia

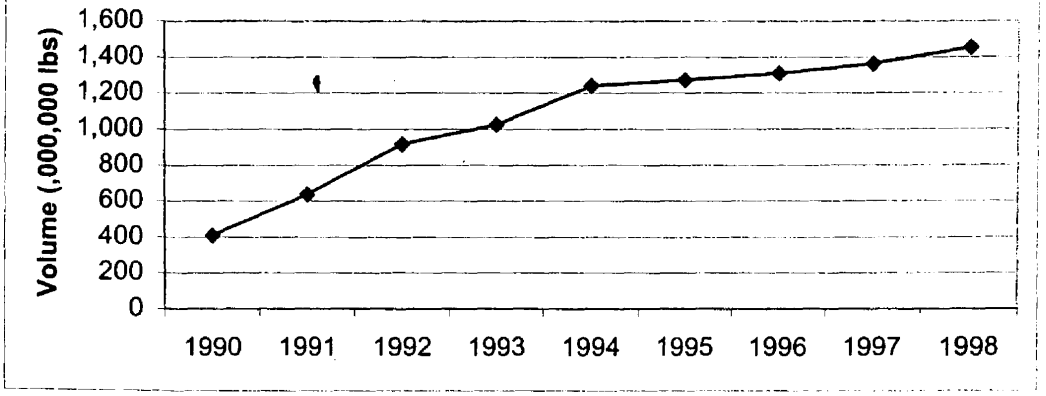
Based on numbers from larger localities in Virginia, glass recycling amounts increased in 1999. Glass is increasingly taken out of state due to a lack of facilities in Virginia.

PLASTICS

National

According to a study, conducted by R. W. Beck for the American Plastics Council, Association of Post-Consumer Plastics Recyclers, Alliance of Foam Packaging Recyclers, Grocery Manufacturers Association, National Soft Drink Association, Polystyrene Packaging Association, and the Vinyl Institute, the recycling of post-consumer plastic bottles has continued to grow as shown in Figure 1. The number of plastic bottles recycled in 1998 was 1.45 billion

Figure 1
Growth of Post-Consumer Plastic Bottles



The amount of plastic bottles recycled in 1998 was 1.45 billion pounds, which represents an increase of 7% over 1997. Polyester (PET) bottle recycling was 710 million pounds and High Density Polyethylene (HDPE) was 734 million pounds. This was a 9% and 4% increase over 1997. These two materials accounted for 99.5% of the plastic bottle material recycled in 1998. Despite the

significant amount of PET and HDPE recycled in 1998, the recycling rate remained about the same at 23%.

The number of curbside collection programs was 8,073 in 1998, which was an increase of 1% over 1997. This slowed growth of curbside recycling programs means that collections via this mechanism will not significantly increase unless there are greater efficiencies in collection (participation) or increase material capture rates.

Issues

a) Plastic Beer Bottles

Miller Brewing Company introduced beer in plastic bottles this year. They have stated that these bottles are safer than glass for sporting events, and use at pools, beaches, and picnics. These bottles will keep drinks cooler than aluminum and as fresh as glass. They are $1/7^{th}$ as heavy as glass and therefore should offer advantages in transportation and handling. Continental, who manufactures the bottles for Miller, is offering 5¢/lb for the amber colored bottles over a mixed color bale of PET.

Miller feels that plastic bottles offer a competitive advantage. If so, others will follow. An industry consultant has stated that the beer market will increase virgin PET demand by 14% in 7 years.

b) PET Capacity Utilization

The glut of PET in the market appears to be residing. A major reason is the popularity of the 20-oz beverage container. Production of these bottles grew from 130 million in 1990 to 12 billion in 1999 according to Kevin Fogarty of KoSa (second largest PET manufacturer in the US). As a result, virgin PET prices increased by 13¢/lb in 1999.

c) Coca Cola Recycled Content Bottles

Partly in response to a national campaign by the Grass Roots Recycling Network (GRRN), Coca Cola has recently pledged to utilize 10% recycled content polyester in 25% of its bottles during 2000. Based on an estimated bottle resin utilization of between 500 and 800 million pounds of resin annually, this commitment would increase demand for recycled PET by approximately 15 million pounds. Coke officials have been quoted as saying that they are paying a premium for recycled PET resin and the cost is competitive to prices that they are paying for virgin resin. Entry into this by other beverage manufactures such as Pepsi could increase demand even further. In an already tight market the additional demand will increase the price of recycled resin. Environmentalists believe that collection rates will also

need to be increased but are divided as to how this will be accomplished. The GRRN favors bottle bills, which they state are a proven success and that bottle bill states recycle 2 to 3 times more bottles than non-bottle bill states.

In 1991 both Coke and Pepsi test marketed a bottle with 25% recycled content utilizing depolymerization technology but they were forced to abandon the trial because of cost. The recycling technology appears to be a less expensive direct-blend process but industry experts feel that depolymerization capabilities will be required because of the increasing variety of bottle colors and designs make existing mechanical separation techniques less effective.

Carpet Recycling

In 1999 Evergreen Nylon Recycling (ENR) started operating a commercial depolymerization process to recycle post-consumer carpets with nylon 6-face fiber. This facility, located in Augusta, Georgia, will process over 150 million pounds of nylon 6 carpet annually and produce 100 million pounds of caprolactam (monomer of nylon 6). The recovered caprolactam is indistinguishable form that made from conventional production. The performance, properties and appearance of the nylon 6 made from the recovered caprolactam will be the same as made from conventional caprolactam.

To support this recycling operation, ENR has established a national collection infrastructure of over 85 regional suppliers. There are three suppliers in Virginia: Jerabek's Carpet Service in Richmond, The Foam Recycling Center in Arlington, and Resource Recovery in Virginia Beach. Since start-up, over 100 million pounds of material has been collected.

DuPont and Wellman recover nylon 6,6 from post-consumer carpets via a mechanical separation technology. The resin is used in manufacturing parts used in automobiles. DuPont utilizes its DuPont Flooring Services to collect the carpet while Wellman utilizes independent recycles for their feed. DuPont has announced that in 2001, it will operate a pilot scale depolymerization process in Canada. The capacity of the facility will be 4 million pounds per year. If the technology is feasible, DuPont plans to expand to a 30 to 50 million pound operation in 2003.

USED OIL

National

Oil sent to recyclers is either re-refined for use in motor vehicles, or it is cleaned and used as a fuel. An additional issue is the recycling of oil filters, which are made of a steel body, but which may contain, even after normal draining, a half-pint or more of used oil.

Virginia

As mentioned in the DEQ section on page six (6), a statewide study on the existence of both oil collection sites and oil processors was completed in 1999. The findings were:

- 3 to 4.5 million gallons of used oil were lost during FY 2000; 4.7 to 5.9 million oil filters and 1 million gallons of antifreeze are discarded each year.
- 596 locations collect used oil (471 private and 125 publicly – owned), 69 collect oil filters and 169 collect antifreeze.
- All contact with collection centers and oil processors indicate that significant capacity currently exists that can handle a large increase in collections, more than enough to accept all waste oil in Virginia and recycle it through a processor, two of which are providing services in Virginia. For antifreeze, there are 7 recycling and 10 additional collection firms.

An executive summary of the report is included as Appendix C.

PAPER

National

According to the American Forest and Paper Association (AF&PA), Americans set a record in 1999 by recycling over 47.3 million tons of paper and achieving a recycling rate of 45%. This compares favorably to 1998 rates of 44.7 percent and 1997 rates of 43.9%, nationally. The paper industry's commitment to recycling is shown by the investment in equipment used to process the recycled materials.

In order to achieve the 50% recycling goal, set by the AF&PA in the mid-1990s, efforts and attention must continue to focus on:

1. Markets. Paper is a commodity and subject to the laws of supply and demand. Export markets are an important part of balancing the supply. The availability of oversea containers at competitive freight rates must be encouraged to maintain a proper balance.
2. Recycling Rates. Paper can only be recycled if paper mills and the recycling infrastructure continue to invest billions of dollars to recapture this fiber. Mills will continue to make this investment when states, such as Virginia, improve their recycling rates. Improving recycling rates will produce the quantity needed for the paper industry to continue its investment.
3. Public Perception. There is concern in the industry that the public is becoming less committed to recycling due to a perception that, in light of increases in waste importation in some areas, landfill capacity is not an issue and thus recycling may no longer be needed. The industry believes

that declines in recycling will hurt its ability to meet its own recycling goals as well as those of various recycling programs.

Virginia

Tidewater Fibre reports that recovered paper prices fell slightly in 1998; however, Virginia paper mills continue to import recycled paper, and to use large quantities of newspaper, corrugated cardboard, office paper and mixed paper. Competitive costs, steady freight rates and labor relations also allow excess waste paper exporting to overseas locations.

ORGANIC COMPOSTING INDUSTRY

National

Organic waste recycling (composting) has by far the largest potential for growth of any of the different recycling industries in America. Europe, with its much higher population densities, is far ahead of the US in composting. In Germany for instance it is estimated that they are composting over 90% of their organic waste stream. Because so many states do not know how much is composted, it is impossible to get an accurate figure for the US. However the estimates are that it would be less than 20%. Because organic make up 37% of our total waste stream, this is the last big category that could be recycled and added to our total-recycled figure. Recycling in the US, which now stands at 28% and is growing very slowly, can only be increased dramatically by greatly increasing our composting effort.

Virginia

During 1999, the Council studied the Organic Composting Industry in Virginia. At its May 11, 1999 meeting, it received a Panel presentation on issues facing the industry. Following up on that discussion, representatives of the industry presented a summary of shortfalls in the Virginia process for regulating and permitting solid waste composting facilities at the Council's September 14, 1999 meeting. Appendix A includes a copy of that presentation.

Since those discussions, considerable progress has been made in improving and updating the composting sections of the Virginia Solid Waste Management Regulations. With input from the Organics Recycling and Composting Committee of the Virginia Recycling Association, the DEQ has developed modifications to the current regulations that address the concerns of the industry. The regulatory modifications developed through this process were being considered through the Executive Review Process as established by the Administrative Process Act, at the time that the Council's Annual Report was being prepared.

According to the 1998 Solid Waste Report, prepared by DEQ, 153,472 tons of waste were recycled by being composted at permitted facilities in 1998. DEQ expects that the proposed modifications to the Solid Waste Management Regulations will result in composting becoming a larger element of the state's waste management and recycling industry.

Representatives of the organic composting industry have indicated their belief that composting is an important economic opportunity for Virginia. In this context, the industry believes that expeditious consideration of the proposed regulatory modifications and development of financial assistance programs are important to the future competitiveness of the industry.

SCRAP METAL

National

The scrap steel industry has recovered somewhat from the lows of last year. The mills are very busy and the scrap flow to the mills is sufficient. The problem now is that there is generally an overabundance of scrap in Europe, which means imports are coming into the US rather than scrap being exported. With these imports, the prices of scrap steel will level off or even decline to some extent. As long as the U.S. economy remains strong the markets for scrap steel will remain strong.

On the other hand non-ferrous metals have declined during the first quarter of 2000. Aluminum, copper and stainless steel prices declined to a 12-month low. Again, the over supply of raw materials in Europe has added to our domestic consumption in the U.S.

Virginia

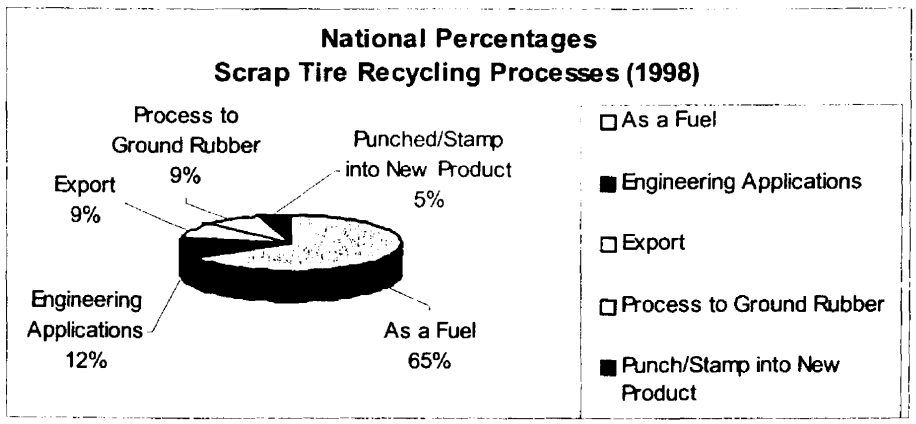
The Chaparral steel mill is on-line and purchasing scrap. Its consumption, together with other steel mills in Virginia running at about 90% production capacity, has created a nice market for scrap steel in Virginia. The outlook for this to continue all depends on the rest of the global economy.

TIRES

National

The National Scrap Tire Management Council maintains a website that covers scrap tire management data. The site can be accessed @ http://www.rma.org. For this report, several interesting overviews have been bulleted from the "Facts and Figures" section of the website. The entire section is included as Appendix G.

- 270 million scrap tires were generated in the U.S. in 1998
- By weight, tires make up approximately 1. 8% of the total waste stream
- The number of states that have scrap tire legislation/regulation is 48
- 35 states ban whole tires from landfills
- Oil (equivalency) in a passenger car tire is 7 gallons



The number of new products that contain recyclable tire rubber is 110 and counting. The fastest growing new markets: playground cover, soil amendments, floor/matting.

Virginia

The Virginia Waste Tire Management Program continues work with its regional waste tire management projects and the administration of the End User Reimbursement Program. In 1999, DEQ closed out its waste tire management agreements with the Cumberland Plateau Planning District Commission and the Mt. Rogers Planning District Commission for waste tire management work in southwest Virginia, while executing agreements with the Virginia Peninsulas Public Service Authority (5 counties and 3 cities) and the Northern Neck Planning District Commission (4 counties) for waste tire management projects in their service areas. DEQ continues to work with waste tire management projects administered by the Central Virginia Planning District Commission (13 counties and 2 cities) and the Lord Fairfax Planning District Commission (over-sized tire project). The regional waste tire management projects have recovered and processed over 5.9 million passenger tire equivalents (PTEs; for example, a single truck tire equals 5 passenger tires) since 1993 at a project cost of almost $5.35 million from the Waste Tire Trust Fund.

In 1999, DEQ approved documentation on the beneficial use of Virginia waste tire material by applicants both in and outside of the Commonwealth. Beneficial use is broken into three primary categories: civil engineering, tire-derived fuel, and recycled products manufacture. Over 9.8 million PTEs were collected, processed, and beneficially used during the year, with End User

Reimbursements of over $2.2 million paid from the Waste Tire Trust Fund. This waste tire material came from certified tire piles and current flow operations served by the waste tire management network developed through the state program. Since its inception, the End User Reimbursement Program has documented the recovery, processing, and beneficial use of 43,690,300 PTEs at a cost of over $12 million from the Fund.

PURCHASE OF RECYCLABLES

At the Annual Conference of the Virginia Recycling Association, several workshops were presented on buying recycled products. Topics covered local and state government programs, "green" or environmentally friendly procurement and developing buy recycled policies. At the annual State Procurement Conference for state and local government purchasing professionals, sessions were offered on "Green Procurement" with presenters from the Virginia Department of General Services and the Virginia Department of Environmental Quality.

SOLID WASTE INDUSTRY

National

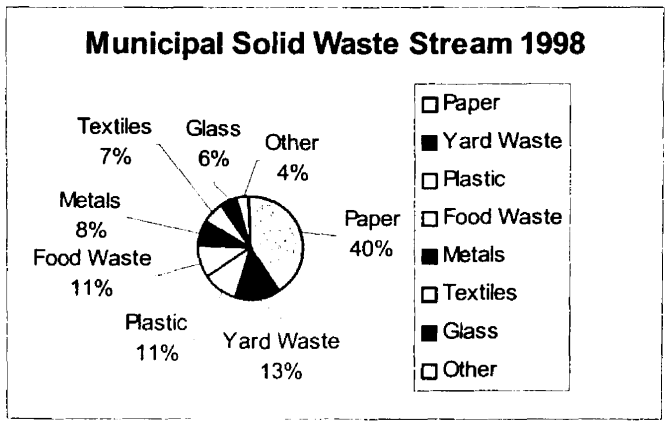
The EPA Office of Solid Waste in Washington has published a 12-page fact sheet describing the national municipal solid waste (MSW) stream on date collected from 1960 through 1998. The fact sheet shows the following statistics.

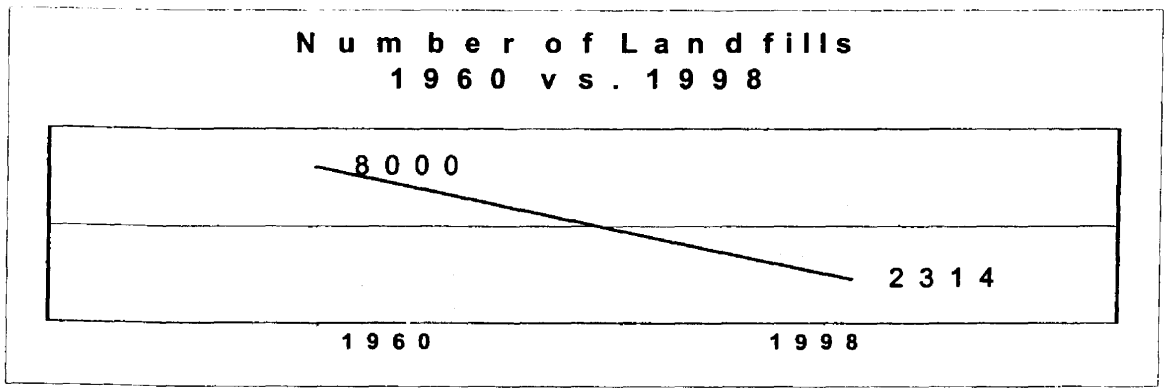
Amount of Waste Generated

	1960	1970	1980	1998
Population	180 million	204 million	227 million	270 million
Waste Generated	88.1 Million tons	121.1 Million tons	151.6 Million tons	220.2 Million tons

Generation Rate Per Capita Per Day (in pounds)

	1960	1970	1980	1998
Pounds per Person per Day	3.25 lbs	3.66 lbs	4.5 lbs	4.46 lbs.





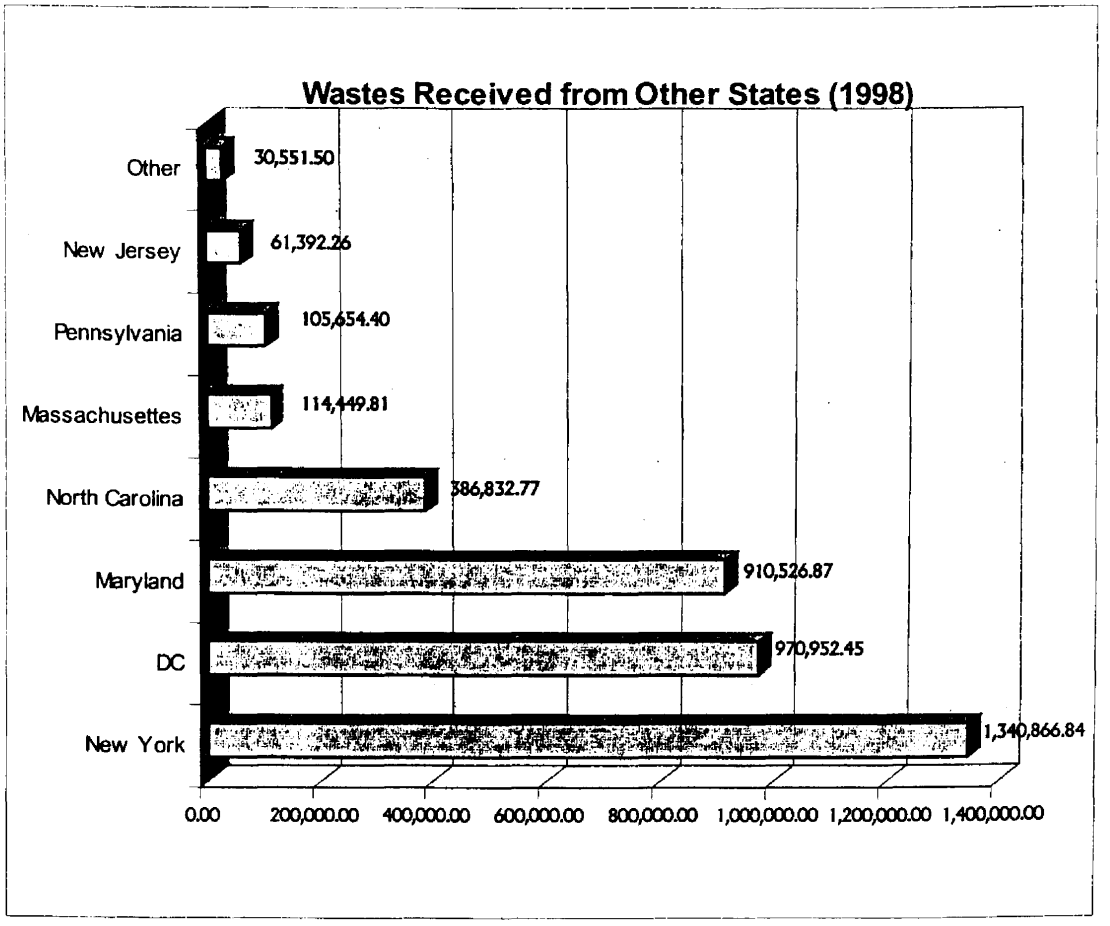
You can access the report in its entirety by going to the web at http://www.epa.gov/epaoswer/non_hw/muncpl/msw99.htm

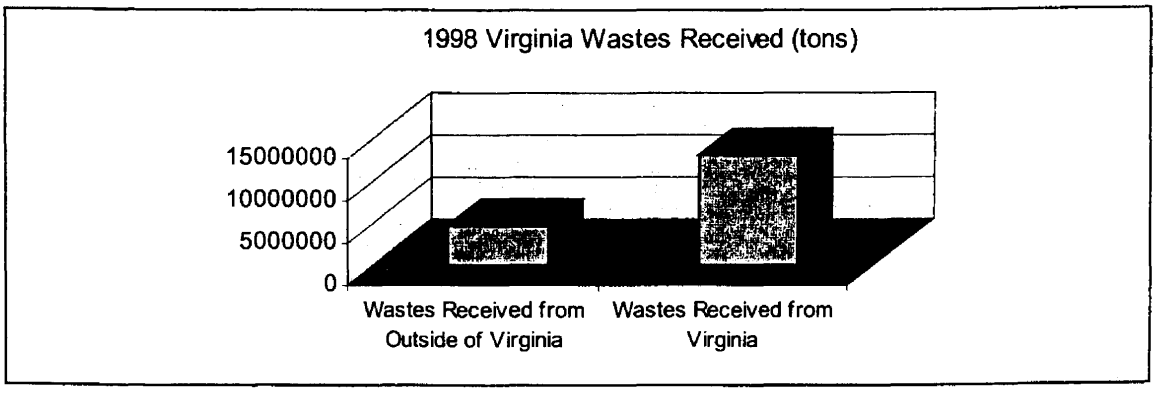
Virginia

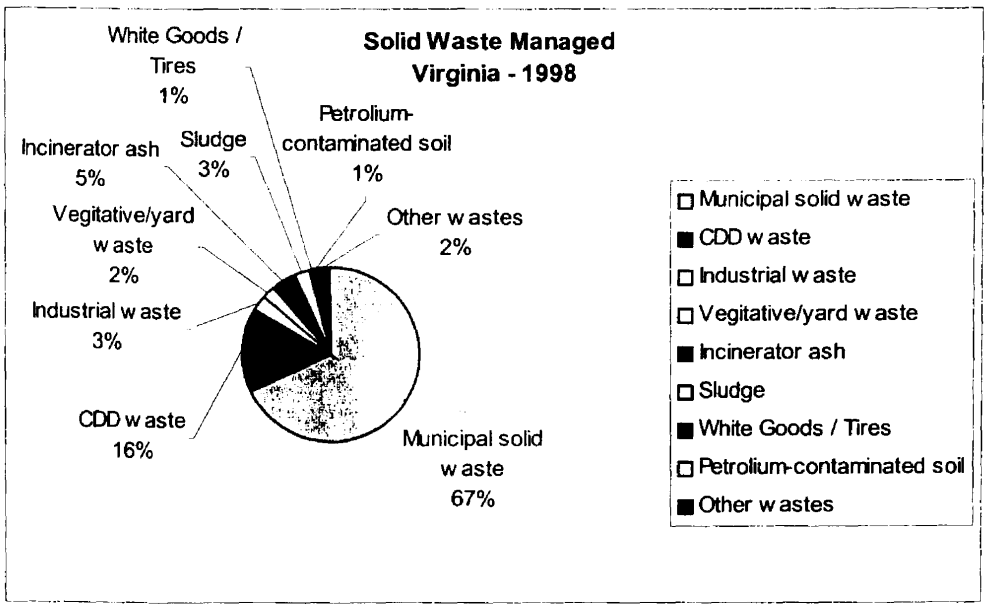
In accordance with § 10.1-1413.1, the Department of Environmental Quality prepares an annual report entitled "Solid Waste Managed in Virginia." The report can be found in its entirety on the web at http://www.deq.va.us. The report includes information on each of the following methods of waste management.

- Recycling
- Composting
- Landfilling
- Incineration
- Store on site
- Sending off-site

Graphs depicting the most current data available follow.


Wastes Received from Other States (1998)
Other
New Jersey
Pennsylvania
Massachusettes
North Carolina
Maryland
DC
New York
30,551.50
61,392.26
105,654.40
114,449.81
386,832.77
910,526.87
970,952.45
1,340,866.84
0.00
200,000.00
400,000.00
600,000.00
800,000.00
1,000,000.00
1,200,000.00
1,400,000.00


1998 Virginia Wastes Received (tons)
15000000
10000000
5000000
0
Wastes Received from Outside of Virginia
Wastes Received from Virginia


Solid Waste Managed
Virginia - 1998
White Goods / Tires 1%
Petrolium-contaminated soil 1%
Sludge 3%
Incinerator ash 5%
Other wastes 2%
Vegitative/yard waste 2%
Industrial waste 3%
CDD waste 16%
Municipal solid waste 67%
Municipal solid waste
CDD waste
Industrial waste
Vegitative/yard waste
Incinerator ash
Sludge
White Goods / Tires
Petrolium-contaminated soil
Other wastes

VRMDC RECOMMENDATIONS

Based on its deliberations between January 1999 and June 2000, the Virginia Recycling Markets Development Council has a number of recommendations.

1. The State should establish the position of Recycling market Development Specialist to be housed at the Cabinet level to coordinate efforts among the various state agencies. This recommendation should be considered during the 2001 Session of the General Assembly.

2. As recommended in its 1998 Annual Report, the Council should continue its examination of public information and education programs on the reasons for recycling and conserving landfill space, and encouraging consumers to demand the use of post-consumer recycled content materials in new products.

3. The Council should explore the issue of standardization of recycling rate calculation methodology. This could include modifications to the current Virginia system or adoption of the methodology developed by the U.S. Environmental Protection Agency.

4. The Council should continue its support for the continuation of the current recycling equipment tax credit.

Respectfully submitted,

Members, Virginia Recycling Markets Development Council

APPENDIX A
COMPOSTING INDUSTRY
PRESENTION ON IMPEDIMENTS

ORGANIC WASTE PRESENT ACTION
VRMDC Regular Scheduled Meeting
May 11, 1999

In carrying out the charge that the General Assembly provided to the Council, the Council is to undertake the following activities:

4. Identify barriers to the development of markets for recycled material, including existing state policies, regulations and procedures, and recommend alternatives to overcome such obstacles.

Existing DEQ Imposed Barriers to Composting

- Expense, Permit fee of $9700, Systems (e.g., paved surface, leachate collections ponds) that are frequently unnecessary or excessively expensive to protect the public health and the environment.
- Professional Engineer's certification of a facility's compliance with the regulations.
- Sampling and testing for airborne spores on a monthly basis.
- Use of inappropriate monitoring and testing methods, unsuitable requirement for testing of finished compost, inappropriate measure of compost quality.
- Permitting process is excessively slow.

Legislative Action Points

- Ease stringency of regulations for some materials by categorizing wastes according to their hazard potential.
- Ease stringency of regulations by categorizing composting facilities based on the volume of material handled.
- Apply exemptions consistently for both the vegetative waste management regulations and the solid waste management regulations.
- Adopt an accurate definition for compost quality and appropriate methods for testing finished product.
- Review and change current procedures to shorten the time required to obtain a permit.
- Create exemptions for on site composted materials that are generated and used on the same site.
- Create exemptions for research operations.

APPENDIX B
REQUEST TO THE GOVERNOR CONCERNING ESTABLISHMENT OF THE POSITION OF STATE RECYCLING MARKET DEVELOPMENT SPECIALIST
AND
POSITION DESCRIPTION
RECYCLING MARKET DEVELOPMENT SPECIALIST

Virginia Recycling Markets Development Council

April 10, 2000

The Honorable James S. Gilmore, III
Governor
Commonwealth of Virginia
State Capitol
Richmond, Virginia 23219

Re: State Recycling Coordinator

Dear Governor Gilmore:

The Virginia Recycling Markets Development Council was established by the General Assembly in 1993 to develop and monitor the implementation of a plan to strengthen Virginia's recycling infrastructure and markets. The Council is directed to undertake a number of activities in support of this overall mission and to report annually to the Governor and the General Assembly. The Council's 1999 Annual Report is in preparation and will be submitted in June 2000.

Attached for your consideration is one (1) copy of a position description for a "Recycling Markets Development Specialist" approved by the Council at its March 14, 2000 meeting. Establishment of this position is of such importance to the Council that the Council directed me to write directly to you in advance of completion of the 1999 Annual Report, requesting your support for the establishment of this position. This recommendation will be a central element of the Council's 1999 Annual Report.

Over the past year, the Council has explored alternatives for elevating the visibility of recycling within state government in a manner that will increase the effectiveness of current state and local recycling programs, while concurrently enhancing the Commonwealth's competitive position and attraction with respect to the recycling industry. In conducting this study, the Council reviewed similar initiatives in other states and consulted with Department heads in those state agencies with significant responsibilities in recycling. Based on this study, the Council unanimously recommended at its meeting of March 14, 2000 that the Commonwealth establish a "Recycling Market Development Specialist."

The recommended position would be responsible for a number of activities, including recycling and market development, coordination of state agency initiatives in recycling and market development, outreach and education, coordination of policy development, research and related report writing and provision of staff assistance to the VRMDC. This position should be able to facilitate coordination among state agency activities across several Secretariats. While the Council was uncomfortable recommending a specific agency home for this position, there was general consensus that the position should be a senior level professional reporting directly to the Secretaries.

c/o Hampton Roads Planning District Commission
723 Woodlake Drive · Chesapeake, Virginia 23320 · (757) 420-8300

On behalf of the of the Virginia Recycling Markets Development Council, thank you for your consideration of this recommendation. Members of the Council would be pleased to discuss this issue with you or your representative, if you feel that would be useful. If you have any questions, please do not hesitate to call me at (757) 420-8300.

Sincerely,

John M. Carlock, AICP
Chairman, Recycling Markets
Development Council

JMC:fh

Attachment

cc: The Honorable John Paul Woodley, Secretary, Natural Resources
The Honorable Shirley J. Ybarra, Secretary , Transportation
The Honorable Barry M. DuVal, Secretary, Commerce and Trade
The Honorable G. Bryan Slayton, Secretary, Administration
Mr. Dennis Treacy, Director, Department of Environmental Quality
Mr. Donald Williams, Director, Department of General Services
Mr. Charles Nottingham, Commissioner, Department of Transportation
Mr. David G. Dickson, Director, Department of Business Assistance
Mr. Mark Kilduff, Executive Director, Virginia Economic Development Partnership

COMMONWEALTH OF VIRGINIA

RECYCLING MARKET DEVELOPMENT SPECIALIST

PART I: ORGANIZATIONAL INFORMATION

Position to promote recycling and market development as a priority of the Commonwealth of Virginia, thus supporting the state's effort in waste diversion through recycling and to promote the use and purchase of recycled materials. Recommend position report to the Cabinet level of State Government in order to facilitate coordination among the state agencies involved in recycling and market development in the Commonwealth.

PART II: POSITION INFORMATION

This position is to act as the contact point for the purpose of promoting recycling businesses and market development in the Commonwealth of Virginia and to champion the cause of recycling to local governments, business and industry. This position will have two primary responsibilities:

A. To recruit recycling based companies to Virginia and encourage existing companies to use recycled materials in their standard production process in lieu of virgin materials where feasible and to work on recycling market development in Virginia and the surrounding region.

B. To manage projects of the Virginia Recycling Markets Development Council (VRMDC) and serve as a liaison between the Council and the Legislature, state government and industry and professional groups.

PART III: WORK TASKS AND DUTIES

Recycling and Market Development

This individual will facilitate the development and growth of recycling business and industry in the Commonwealth of Virginia and will assist existing companies with expansion efforts. Responsibilities include researching marketplace for types of recycling companies needed to improve the markets for recyclables within the state, identifying and seeking out successful recycling companies that are looking to expand operations in the region and providing the necessary guidance, information and logistics to make exploration of Virginia as a potential location attractive. Recruitment will include activities such as initial company contact and communication, exploration of needs, site selection and contact with financing sources and economic development officials as required. The position will serve as a technical resource to business and industry and others on recycled material supply, recycled product development and purchase, and will work closely with economic development professionals to encourage the expansion of recycling markets in Virginia.

This position will coordinate with local and regional officials and state agencies involved in recycling activities and provide technical assistance and ongoing continuity to promote recycling and market based development, particularly new recycling companies and technologies.

This position will examine current incentives available from the State, examine neighboring states' efforts in recruiting recycling companies in order to assess competition and recommend additional enticement mechanisms for Virginia in order to be competitive in recycling based industries.

This position will monitor, analyze and assess recycling data and information from the private sector, national, state and local government agencies and provide recycling market and economic development information to the Governor and the members of the General Assembly.

Coordinate Research, Report Writing and VRMDC Assistance

This person will coordinate research and report on those issues and challenges as identified by the VRMDC which have been impediments to market development or which would enhance future recycling and waste reduction development within the State. Additionally, this position will assist the VRMDC by coordinating and producing the annual report of the Council, and managing the administrative staff support for VRMDC provided by the Cabinet office or designated state agency to record, prepare and distribute meeting minutes and notices.

Outreach and Education

This individual will serve as advisor for technical assistance, outreach and education for recycling business recruitment and expansion-related business issues. Presentations will be made at workshops, conferences and other meetings on various recycling markets and economic development issues.

This position will develop resource materials, which promote the Commonwealth of Virginia as a recycling friendly business venue. Other responsibilities include bringing together key participants as needed to provide prospective firms with relevant information and to answer inquiries from potential development prospects.

PART IV: RECOMMENDED QUALIFICATIONS

The individual selected for this position should possess a strong recycling background and understanding of recycling infrastructure and commodity issues; have the ability to stay current with this rapidly evolving field from both policy and technology perspectives; have a thorough knowledge of economic development incentives, business management principles, solid waste issues, state and local government operations and the legislative process.

Position requires an emphasis on customer service, project management and public relations skills. Must have excellent oral and written presentation and communications skills, the ability to collaborate effectively with a variety of individuals and organizations and the ability to work independently.

APPENDIX C
EXECUTIVE SUMMARY
"VIRGINIA USED OIL, FILTER, AND ANTIFREEZE CONSUMER MANAGEMENT STUDY"

VIRGINIA USED OIL, FILTER, AND ANTIFREEZE CONSUMER MANAGEMENT STUDY

PRODUCED BY THE NORTHERN VIRGINIA
PLANNING DISTRICT COMMISSION

UNDER CONTRACT TO THE VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

OCTOBER 4, 1999

Virginia Used Oil, Filter, and Antifreeze Consumer Management Study

PREFACE

October 4, 1999

PURPOSE AND AUTHORITY: The purpose of the Virginia Used Oil, Filter, and Antifreeze Consumer Management Study is to provide an analysis of alternatives for a Virginia system for used oil, filter, and antifreeze collection and reprocessing and to develop recommendations for a State-wide Used Oil, Filters, and Antifreeze Management Program. The 1998 General Assembly appropriated $50,000 for the study in the Department of Environmental Quality's (DEQ) 1998 Budget Amendment. After a competitive bid, the Northern Virginia Planning District Commission (NVPDC) was awarded Contract Number 979900351 in November, 1998. This report fulfills NVPDC's obligations under that contract.

STAFF ASSIGNED: R. Allan Lassiter, Jr., Manager, Virginia Waste Tire Program, served as the Department of Environmental Quality staff contact for this study. Other DEQ participants were Mike Murphy, Director, Environmental Enhancement, Steve Coe, and Steve Frazier. NVPDC staff assigned to the study were:

- Rob Arner, Project Manager, Solid Waste Program Manager
- David Bulova, Director of Environmental Services
- Linda Tenney, Deputy Executive Director
- JoAnn Spevacek, Deputy Executive Director for Legislative Services
- Ken Billingsley, Director of Demographics and Information Services
- Stan Haransky, Don Waye, Melissa Ellinghaus, and Norm Goulet

ACKNOWLEDGEMENTS: NVPDC wishes to acknowledge the members of the Working Task Force on Means for Enhancing the Collection and Recycling of Used Motor Oil and Antifreeze and others for their valuable input throughout this study. Working Task Force Members include Tom Harvey (Hollins Hall Shell), Roger Ward (MetalPro), Wayne Owens and Martin Miller (Mid State Oil Refining Co.), John Stein (Planet Earth Recycling), Bruce Keeney (Virginia Gasoline Marketers Council), Mike Ward and Don Schroeder (Virginia Petroleum Council), Michael O'Connor (Virginia Petroleum Council), Steve Akridge (Virginia Tire and Automotive Services Dealers Association), Lyn Coughlin (Virginia Legislative Services), Matt Nunnally, Shelly Hall, and Vince Martin (U.S. Filter), Paddy Katzen (Virginia DEQ), and Charles Barnes (Automotive Oil Change Association).

CONTACT INFORMATION:
Northern Virginia Planning District Commission
Environmental Services Division
7535 Little River Turnpike, Suite 100
Annandale, Virginia 22003
(703) 642-4624/F (703) 642-5077

Department of Environmental Quality
R. Allan Lassiter, Jr.
(804) 698-4215/F (804) 698-4224

Virginia Used Oil, Filter, and Antifreeze Consumer Management Study

TABLE OF CONTENTS

TABLES

FIGURES

CHARTS

MATRICES

APPENDICES

Virginia Used Oil, Filter, and Antifreeze Consumer Management Study

EXECUTIVE SUMMARY AND RECOMMENDATIONS

The improper disposal of used oil, oil filters, and antifreeze (UOFA) by those who perform their own automobile maintenance is a long-standing environmental concern. The Northern Virginia Planning District Commission (NVPDC) estimates that 3 to 4.5 million gallons of used oil, 4.7 to 5.9 million oil filters, and approximately one million gallons of antifreeze were "lost" in Virginia's environment (including disposal on the ground, down storm drains, and in landfills) in 1998 alone. Despite the fact that this amount of oil over a four year period is equivalent to the 1989 Exxon Valdez oil spill (11.2 million gallons), the diffuse nature of the problem makes it difficult to address. While Virginia led UOFA recycling efforts in the early 1980s, a number of factors have resulted in their effectively being no State-wide management program.

The purpose of the Virginia Used Oil, Filter, and Antifreeze Consumer Management Study is to provide an analysis of alternatives for a Virginia system for used oil, filter, and antifreeze collection and reprocessing and to develop recommendations for a State-wide Used Oil, Filters, and Antifreeze Management Program.

The study is the result of a recommendation of the Working Task Force on Means for Enhancing the Collection and Recycling of Used Motor Oil and Antifreeze which was formed in 1997. The "Working Task Force" cited the need for a comprehensive management study to provide detailed information on the cost and practicability of UOFA management options. The General Assembly appropriated $50,000 for the study in the Department of Environmental Quality's (DEQ's) 1998 Budget Amendment. NVPDC was awarded the contract in November, 1998.

NVPDC's final report, which includes seven chapters, is based on project tasks outlined in DEQ's Request for Proposals. Chapters include:

- Virginia Used Oil/Antifreeze Policy Review and Legislative History
- Baseline Sales, Generation, and Current Management Assessment, and Profile of the Average "Do-it-Yourselfer"
- Used Oil and Antifreeze Collection Sites and Information on National Marketers
- Contamination Problems and Liability Issues
- Site Requirements for Used Oil and Antifreeze Collection Centers
- Used Oil, Filters, and Antifreeze Management Options
- Educational and Outreach Program Options

The information collected in these seven chapters, in addition to comments collected from two meetings of the Working Task Force (March 30, 1999 and August 24, 1999), form the basis of NVPDC's final recommendations. Recommendations are presented first followed by a summary of each report chapter.

RECOMMENDATIONS

The focus of NVPDC's recommendations are on (1) how to ensure that those who change their own automotive UOFA (commonly known as do-it-yourselfers, or DIYers) properly recycle or dispose of the material and (2) how to ensure that a collection infrastructure exists to support DIYer participation.

Recommendations are meant to be implemented in phases. The first year of any program will be needed for up front program development and administration. In addition, several recommendations will require legislative action by the General Assembly. To the extent possible, legislation regarding a UOFA management program should be consolidated. Table E-1 outlines each recommended component according to the personnel needs as well as anticipated annual cost. For this study, personnel is designated as FTEs, which corresponds to a full time position (or Full Time Equivalent).

Finally, most recommendations are actions that are currently practical to implement. However, there are a few recommended actions that could be practical to implement but require interim steps (denoted PHASE 2). In addition, there are other options that are worthy of further study, but no specific action at this time (denoted PHASE 3).

(1) **Develop and Fund a UOFA Recycling Hot-Line/Web Site Infrastructure.** Implementation of a dedicated hot-line and increasing staff to run the program was cited by most members of the Working Task Force as central to any State-wide program. The hot-line appears to be a necessary pre-cursor to the implementation of most public outreach programs and would be specifically needed to make any retailer signage requirements work effectively. The challenge of a hot-line is ensuring that information on collection center locations (typically by zip code/possibly by county or city), and what is recycled at each location, is up-to-date and comprehensive. Staff would need to be on hand to take "out-of-the-ordinary" calls that could not be processed through an automated system.

A web page with information on UOFA collection centers should also be developed to support recycling efforts – although since less than half of the total population and less than a quarter of the target DIY population are connected to the Internet, a web page should not be established in lieu of a hot-line. A web page may also serve; (1) as an avenue for businesses to update information on whether or not they are a participating site and what they collect; and, (2) as a way to provide consumer recycling information to the public.

(2) **Develop and Fund an Outreach Program.** NVPDC recommends that an education and outreach program be developed for the public (focusing on those population segments identified as having a high percentage of DIYers) and to promote and increase the number of private businesses serving as collection centers. The following addresses; (a) infrastructure needs; (b) recommended efforts to increase collection center participation; (c), recommended efforts to increase DIYer recycling; and, (d) point of purchase signs.

(a) Collection Center Outreach Infrastructure. The State should develop an infrastructure for reaching collection centers and potential collection centers. Chapter 7 references several outreach possibilities to maintain and expand the base of collection centers (newsletters, fact sheets, point of purchase cards, stickers, placards, etc.). Almost all of these efforts require a distribution infrastructure and a comprehensive list of participating collection centers and those businesses that have the potential to be collection centers. In addition, the Working Task Force cited as a major failure of the existing signage requirements the lack of a distribution system for retailer outreach materials. NVPDC developed a database of existing and potential collection centers as part of Chapter 3. DEQ would need to develop a mechanism to continually update the information contained in the database. How this would be accomplished should be decided by DEQ, but could include relying on any combination of local coordinators, a central calling point at DEQ, or the DEQ web page. The centralized use of student interns is likely to be the most cost-effective means of maintaining the database over time.

(b) Collection Center Outreach. NVPDC recommends that collection center education come in the form of direct mail such as a newsletter, which can provide information on the benefits of being a collection center as well as information on new program benefits (i.e., free signage, advertising on web page, potential cost defrayal for contaminated DIY oil and/or orphan oil, etc.). NVPDC recommends that the State prepare technical information similar to that produced by the U.S. EPA, Texas, and Utah for use by businesses expressing interest in being collection centers.

(c) Public Education and Outreach. NVPDC recommends that an education and outreach program be developed which incorporates the following:

- 1-800 toll free number/web page;
- development of a graphic/logo/motto;
- limited media kick-off campaign;
- revised point of purchase sign with a set re-distribution cycle;
- coordination with DMV such as incorporation of recycling into tests, manuals, and/or registration renewals;
- incorporation of UOFA recycling into DEQ's Pollution Solutions curricular supplements; and,
- piggybacking leaflets into other State mailing or bills or partnering with other relevant agencies (such as local water authorities) to insert leaflets.

(d) Point of Purchase Signs. Point of purchase signs, which appear to have the potential to reach all DIYers, need to be redesigned in a manner that will make it easier for businesses to incorporate into shelf displays and should include the toll-free hotline. The issue of making point of purchase signs "retail friendly" was raised frequently by the Working Task Force. Because these signs may become damaged or removed over time, DEQ should implement a system of re-distribution on a set time cycle such as

once or twice a year. Each mailing should come with a cover letter explaining the purpose of the law behind the signs and asking for voluntary compliance. NVPDC recommends that all retailers (whether they collect UOFA materials or not) should have to display the sign since the location of the retailer may not be the most convenient collection center. Participating collection centers should be provided with separate signage (possibly similar to those for credit cards) indicating that the facility recycles UOFA materials.

(3) **Address Contamination and Orphan Liquids Issues.** In addition to collection center outreach proposals noted above, NVPDC proposes to increase private collection center participation by ensuring that collection centers are not penalized economically for contaminated DIY materials or orphaned products.

(a) Obtain General Assembly Approval For and Develop a Contamination Fund. The need to establish a fund to protect collection centers from contaminated oil from DIYers and from orphan oil was the major finding of Chapter 4. Although not a very frequent occurrence, fear of contaminated DIYer oil appears to be a strong psychological barrier. With regard to contaminated DIY used oil, Virginia could easily adopt a program similar to other states – and probably at minimal cost.

Although there is a need to protect collection centers from the economic liability of contaminated DIYer materials, there is also a need to protect Virginia from expenses incurred as a result of poor management practices. To reduce the State's risk, each collection center should be sent guidelines on proper UOFA material management. In return, as a condition for coverage by the State fund, each collection center should sign an acknowledgement that it will abide by these practices. While large scale enforcement is not practicable or needed, the program at least will raise awareness of management standards.

(b) Orphan Liquids (PHASE 2). It appears based on surveys from Chapter 4 that a more significant problem than contaminated oil from DIYers is orphan liquids. It is not immediately clear what the best direction to proceed should be to address this issue. State developed signage which states that it is illegal to dispose of orphan liquids in such a manner should be distributed to collection centers. In addition, it should be made clear in appropriate public education materials that leaving orphan materials is illegal.

NVPDC recommends exploring the option of extending some type of economic amnesty for collection centers. That is, the State would either partially or entirely cover the cost of disposing of orphan materials. Extending amnesty only to collection centers may be an incentive for those wary of serving as a collection center to a become participant. Safeguards would need to be placed to ensure that materials were truly orphaned and not left as a means for businesses to dispose of the materials cheaply. A cap on volume per month may be one such approach.

(4) **Develop a Local Government Voluntary Collection Center Grant Fund.** As cited throughout NVPDC's report, convenience is key to getting DIYers to recycle their UOFA materials. While most localities have either a public collection center or enough private collection centers to meet demand, there are a number of rural localities in particular where there are neither public or private facilities available. Furthermore, there is a lack of recycling facilities for antifreeze and oil filters in general – whether the locality is rural or urban. NVPDC recommends that the State establish a limited time grant program that makes funds available to all local governments (cities and counties) that pays for the establishment of UOFA material collection centers and pays for the cost of collection (if any) for a specific period of time.

All local governments would be eligible for the collection fund (as a matter of equity), and any local government with an existing facility that only collected used oil would be eligible for a grant to collect antifreeze and oil filters. NVPDC anticipates that other incentives such as the establishment of a contamination liability fund would be enough to increase private sector participation.

(5) **State Procurement Preferences (PHASE 2).** While the federal government requires that a certain amount of its oil and other materials are recycled materials, there is no current requirement in Virginia. NVPDC recommends that DEQ coordinate with the Department of General Services during the first year of Virginia's program to develop a reasonable program that advocates the purchase of recycled oil and antifreeze and possibly reusable oil filters.

(6) **Implement Annual DIY Recycling Surveys.** Benchmarking progress in DIYer UOFA recycling should be a component of the State's program not only to gauge progress but also to identify areas that might require additional resources. The most comprehensive means of tracking recycling by DIYers would be to implement a Processor/End User Reimbursement Program which would require detailed tracking of DIYer material drop-offs. However, as discussed later in #8, NVPDC only recommends further study of the reimbursement option.

As an alternative, and in order to obtain additional information such as the number of Virginians that are DIYers and the percent of DIYers that recycle or otherwise properly dispose of their UOFA materials, NVPDC recommends the implementation of an annual survey. The State of Florida conducted two surveys of DIYers to measure the effectiveness of their 1989 public education campaign. With the use of interns/students, DEQ could conduct a similar survey on an annual basis to track attitudes about UOFA recycling and to track the preponderance of those that change their own oil as a percent of the population as a whole.

(7) **Make Disposal of Oil Filters and Antifreeze on the Ground and in State Waters (Including Storm Drains) Illegal.** At the August meeting of the Working Task Force, it was mentioned several times that if citizens are to take recycling antifreeze and used oil filters seriously, that these materials should at least be treated equally to used oil with regard to prohibitions about dumping.

Virginia's current law (§62.1-44.34:18) only specifically prohibits the dumping of oil on the ground, in the storm drain, etc. NVPDC recommends a simple amendment to the Code would make it clear that it is inappropriate to dump these materials while not changing the legal status of antifreeze or oil filters from a marketing standpoint.

(8) **Processor/End User Reimbursement (PHASE 3).** The purpose of reimbursement program is to ensure that ebbs and tides in the market for UOFA materials do not result in collection centers dropping out because of having to pay for UOFA pick up. This approach is similar to Virginia's existing Waste Tire Program. However, the potential benefits of such a program must be juxtaposed against two limiting issues – the potential high cost and the need to implement a program which would require collection centers to track the volume of DIY materials brought into that business. While tracking would provide invaluable information to the State on recycling and recovery rates, there remains questions about the level of effort that would be involved and the risk that collection centers would drop-out if forced to track DIY materials. Separate tanks just for DIY materials may be a possible solution.

NVPDC recommends that as Virginia's UOFA program matures, that DEQ assess whether processor/end user reimbursement is necessary in light of the implementation of other program components. Because there appears to be less economic incentive at present to collect antifreeze, and particularly oil filters, NVPDC recommends that any reimbursement study or pilot program focus on these two UOFA materials.

TABLE E-1
MATRIX OF RECOMMENDATIONS

#	Program Element	Annual Funding Level*	FTEs	Comments
LEVEL I: INITIAL PROGRAM				
1	Hotline/Web Site	$95,000	1	Central element. Dependent on infrastructure in #2.
2	Outreach Programs			
2a	Collection Center Outreach Infrastructure	$20,000	.25	
2b	Collection Center Outreach	$30,000	.15	
2c	Public Education and Outreach	$200,000	.75	
2d	Point of Purchase Signs	$25,000	.10	
3	Contamination and Orphan Liquids			
3a	Contamination Fund	$20,000	.25	
4	Local Government Collection Center Grant Fund	$50,000	.25	
6	Annual DIY Recycling Surveys	$15,000	.10	
7	Strengthen Legal Status of Filters and Antifreeze	–	–	
	SUBTOTAL	**$455,000**	**2.85**	
LEVEL II: DEVELOPMENT DURING INITIAL IMPLEMENTATION				
3b	Orphan Liquids	$45,000 - $500,000	.5 - 1	Cost range is difficult to predict due to lack of other state programs for comparison.
5	State Procurement Preferences	$25,000	.5	Cost will vary depending on market dynamics of UOFA.
	SUBTOTAL	**$70,000 - $525,000**	**1 - 1.5**	
LEVEL III: WARRENTING FURTHER STUDY				
8	Processor/End User Reimbursement Fund	$320,000 - 1,140,000	2	Cost range is market driven. Cost range for filters only is $66,000 to $666,000. Cost range for antifreeze only is $40,000 to $100,000.
	SUBTOTAL	**320,000 - 1,140,000**	**2**	
	TOTAL ALL ELEMENTS	**$845,000 - $2,120,000**	**5.85 - 6.35**	

*Includes cost of FTEs.

REPORT SUMMARY

I. VIRGINIA USED OIL/ANTIFREEZE POLICY REVIEW AND LEGISLATIVE HISTORY

Used oil recycling in Virginia has its roots in the early 1980s when the State Water Control Board and the State Office of Emergency and Energy Services (OEES) initiated a pilot program in the Richmond-Petersburg area. With the support of industry representatives, the program expanded State-wide. The program maintained a service provider database, recruited program participants, and provided assistance to local program initiatives. The program also conducted a "Virginia Used Oil Recycling Program Annual Survey." The program undertook several projects to inform the public of the importance of taking used oil to a collection facility and a hotline was established to answer calls regarding energy conservation, including used oil recycling.

The 1989 and 1990 General Assemblies resulted in new legislative actions affecting used oil recycling. In 1989, the Code of Virginia (§10.1-1422.5) was amended to require all collection centers and retailers of oil to display a sign either identifying the business as a collection center, or listing nearby businesses which accept used oil from the public. In 1990, the Code (§62.1-44.34:18 and 62.1-44.34:19) was changed to clarify that it is illegal to discharge oil into storm drains or on the land, in addition to open water.

In 1992 and 1993, Virginia's used oil management efforts were transferred to the Virginia Department of Waste Management and then again to the Department of Environmental Quality (DEQ). However, no staff support was transferred or available to assist in maintaining management activities. This has largely remained the case to the present time. Table E-2 provides a summary outline of Virginia's UOFA-related management programs.

Over the past decade, there have been several legislative studies conducted on how to bolster UOFA recycling efforts. The most recent of these was the formation of the aforementioned "Working Task Force" in 1997. Principal Task Force findings were:

- declining collection site participation was caused by economic and liability factors as well as dwindling returns for those participating in the program;
- legislation requiring retailers of motor oil to display a sign had failed to produce its desired results;
- while many localities have information on where to recycle used oil and antifreeze, consumers may not know who to call to receive the information; and,
- there is an absence of any coordinated public information which educates the public on the environment caused by improper disposal of oil and antifreeze.

Due to a lack of information on the potential cost of administering any program State-wide, the Task Force recommended the development of a "comprehensive systems management study." This recommendation was the impetus behind this study.

TABLE E-2
HISTORY OF VIRGINIA'S USED OIL RELATED PROGRAMS

Year	Event	Result
Early 1980s	Pilot program in Richmond-Petersburg area launched by State Water Control Board and OEES.	State begins involvement in used oil recycling program.
Mid 1980s	Program expanded State-wide by Office of Emergency and Energy Services.	Expanded State-wide by OEES.
1984	First "Virginia Used Oil Recycling Program Annual Survey" conducted.	
1986	Program participation drops from a high of 1,010 in 1984 to 512 in 1986.	DMME recruitment efforts increase.
1988	NVPDC provided a grant to establish Used Oil Program Public Awareness Program.	8% increase in used oil recycled in Northern Virginia between 1988 and 1989.
1989	Adoption of recycling goals by Virginia General Assembly.	Renewed focus on recycling. Increased participation in used oil program.
1991	DMME launches used oil collection site recruitment effort.	283 new private collection sites begin accepting used oil.
Early 1990s	Used oil recycling pilot projects established by major oil companies.	Increased service station participation in program.
1992	Formation of Joint Subcommittee on Enhancing End-Use Markets for Recycling Material	Establishment of Recycling Market Development Council in 1993.
1992	Transfer of used oil program from DMME to Department of Waste Management.	
1993	Formation of Virginia Recycling Market Development Council and tax incentives for recycling equipment.	
1993	Department of Waste Management merges into the larger Department of Environmental Quality.	
1993 to 1995	Virginia Department of Transportation becomes involved in used oil and antifreeze recycling efforts.	Demonstration project in Bath County fails to produce significant benefits.
1995	Creation of the Litter Control and Recycling Fund Advisory Committee	Transferred funds to a local government grant program.
1996	Virginia Used Oil Recycling Coalition formed. Performed public relations effort and disbanded.	Public education effort using public service announcements.
1998	General Assembly appropriates $50,000 for a study to identify ways of enhancing recycling State-wide.	

II. BASELINE SALES, GENERATION, AND CURRENT MANAGEMENT ASSESSMENT AND PROFILE OF THE AVERAGE "DO-IT-YOURSELFER"

To properly address UOFA management, it is necessary to estimate the volume of UOFA that is improperly disposed of in Virginia, assess the existing State-wide infrastructure for managing UOFA, and profile of the average "do-it-yourselfer" (DIYer), or consumer who changes his or her own oil/antifreeze.

NVPDC developed a methodology to arrive at UOFA generation and recycling numbers based on national data available from industry sources and State data available from the Department of Motor Vehicles. Major findings are presented in Table E-3.

TABLE E-3
SUMMARY OF USED OIL, FILTERS, AND ANTIFREEZE RECOVERY STATISTICS

Used Oil	% DIYers	40 – 50%
	DIYers Who Recycle	15 – 30%
	Gallons "Lost" in 1998	3 to 4.5 million gallons.
Filters	% DIYers	40 – 50%
	DIYers Who Recycle	1/2 – 1%
	Filters "Lost" in 1998	4.7 – 5.9 million filters per year
Antifreeze	%DIYer	Greater than used oil.
	DIYers Who Recycle	Less than used oil.
	Antifreeze "Lost" in 1998	Approximately 1 million gallons.

It is important to note that recovery rates for filters and antifreeze are considerably smaller than that of used oil. In addition, the volume of used oil handled by DIYers is increasing in the vicinity of 75,000 to 125,000 gallons per year due to increases in the number of registered vehicles.

The infrastructure supporting recycling of UOFA is market driven. The current economic environment does not provide a very powerful incentive for private industry collectors, recyclers, or end users to receive, process, or demand processed used oil or antifreeze.

- Current economic trends could result in a lower DIYer recycling rate due to fewer collection centers willing to shoulder the economic costs of recycling. However, future market forces could also result in the opposite effect.
- Without end user incentives, the DIY collection infrastructure will remain volatile.
- Industry representatives have indicated that the infrastructure can now handle additional volumes of UOFA materials if State-wide efforts were to result in increased recycling.

Information about the prevalence and characteristics of DIYers came primarily from industry sources, and presents the following picture.

- The DIYer market comprises from 45 to 50% of the total non-fleet oil change market, but appears to be shrinking by about 2 to 5% per year. This trend may continue for the short term before flattening out as the "do-it-for-me" market reaches saturation.
- The demographic profile associated with DIYers is a 20 to 45 year old male, blue collar worker with a high school education or less, living in a rural or factory town setting, who enjoys NASCAR auto racing events. People who come from households with incomes of less than $50,000 per year and drive older cars also tend to by DIYers. These attributes, though not necessarily linked, represent a series of associations with increased DIY behavior.

- DIYers who do not recycle are more likely to be Hispanic or non-English speaking or residents of rural areas.
- Two factors linked to DIYers choosing to participate in recycling are education about recycling, and convenience. Monetary incentives have not been strongly linked to increased recycling behavior.

Based on the characteristics of its population, Virginia may have a smaller percentage of DIYers than the national average. However, there appear to be geographic clusters of populations with DIYer characteristics.

III. USED OIL AND ANTIFREEZE COLLECTION SITES AND INFORMATION ON NATIONAL MARKETERS

Virginia has not conducted a State-wide survey of public and private collection sites for DIYers since 1991. However, obtaining this information, and maintaining it through time, is critical to any State-wide effort. As a result, part of NVPDC's work plan was to develop a State-wide database of public and private collection sites. NVPDC's outreach effort to gather information on existing UOFA collection centers included three major modes of data collection.

- **Local Government Recycling Coordinators and Other Local/Regional Government Contacts.** Of Virginia's 95 counties and 40 cities, NVPDC received information back from 82 counties (86% response rate) and 35 cities (88% response rate).
- **Corporate/Trade Association Contacts.** NVPDC contacted or attempted to contact major franchises, associations, and others.
- **State-Wide GTE Database Survey.** NVPDC utilized the State-wide GTE Yellow Pages database to send out surveys to all businesses with the potential to collect UOFA (including service stations and automobile repair facilities). A total of 2,606 surveys were distributed. A total of 348 responses (13% response rate) were received.

Each piece of information was cross referenced to arrive at a unified database representing all known UOFA collection centers. Major findings are presented below.

- There are 596 known DIY used oil collection centers in Virginia – 471 private and 125 public. These figures indicate that Virginia's DIY collection infrastructure is still privately based (79%).
- While information on 1,794 potential private collection facilities was not available (323 facilities indicated that they did not collect DIY material), it is estimated that no more than 100 to 200 private used oil collection facilities were missed for a total of 571 to 671.
- There are 69 facilities that collect oil filters – 62 private and 7 public.
- There are 169 facilities that collect antifreeze – 103 private and 66 public.
- Fifty-seven counties (38%) and 20 cities (50%) reported not having collection facilities. However, some of these are urban areas which already have a number of private collection centers.

- In terms of convenience, the primary factor in determining DIYer recycling, most rural areas require an average drive of 20 miles or greater – a significant deterrent.

Another significant finding is that the types of facilities accepting UOFA material have changed significantly over the past decade. An analysis of the Richmond area reveals that in 1990, almost 100% of collection facilities were service stations (with one local government). In 1999, while the total number of facilities dropped, only 31% are service stations while 22% are local governments and 47% are parts stores. This trend is also seen in the State-wide break-out of private collection points where parts stores now comprise 48% of private collection points while service stations comprise only 32% of private collection points. Some of this can be attributed to the fact that many stations have closed their service bays and now provide "quick mart" type services. These changes are important to consider because it provides a picture of who is not participating and why, and where future recruitment efforts should be targeted.

IV. CONTAMINATION PROBLEMS AND LIABILITY ISSUES

Fear that DIY used oil will be mixed with hazardous waste is a key factor why many businesses choose not to collect DIY UOFA. A 1992 study by the American Petroleum Institute found that "Based on the surveys performed for this report, levels of contamination [nation-wide] are unlikely to exceed two percent by volume." However, a February, 1999 Automotive Oil Change Association (AOCA) member survey found that of the 23% of respondents indicating that they did not accept DIY UOFA, two-thirds cited contamination liability concerns as the primary deterrent.

A related program deterrent is the problem of unidentified liquids (orphaned liquids) being left at collection centers and non-collection centers alike during non-operating hours.

In order to assess the prevalence of the problem of contaminated DIY used oil in Virginia, NVPDC conducted a telephone survey of a representative sample of the total number of collection sites identified in Chapter 3. The survey was conducted from June 28 to July 2, 1999. The results of the survey indicate that while there are problems with contaminated used oil from DIYers (32% of those surveyed had some problems with contaminated oil), they tended not to be serious in most cases. This can be attributed in part to apparent "self-policing" by collection centers. When smoothed for population differences, there were no readily apparent hot spots in the State.

The issue of orphaned liquids appears to be more significant than that of contaminated oil, with 48% of those surveyed indicating that they had experienced problems, some of which were severe. Addressing the problem of orphaned liquids is more complicated than that of contaminated oil in that there appears to be no other state programs that address the issue that Virginia could emulate.

V. SITE REQUIREMENTS FOR USED OIL AND ANTIFREEZE COLLECTION CENTERS

How a used oil, filter, and antifreeze collection center is set up and operated plays a major role in encouraging proper recycling of these materials and minimizes any potential problems (liability and economic) associated with accepting DIY material. While minimum requirements for collection centers are spelled out under 40 CFR, Part 279, "Standards for the Management of Used Oil" under the Resource Collection and Recovery Act (RCRA), there are a number of best management practices and technical guidelines that could be promoted by the State to minimize exposure to liability and to maximize the protection of the environment.

VI. USED OIL, FILTERS, AND ANTIFREEZE MANAGEMENT OPTIONS

Research by NVPDC revealed numerous of potential UOFA management options for consideration by the Commonwealth. Options, and a brief description, are outlined below. The anticipated feasibility, ease of implementation, effectiveness, budgetary requirements, staffing requirements, and legislative requirements are provided in the main report.

6.1 Maintain the Status Quo or Enhance the State-Level Infrastructure.

6.1.1 **Maintain Status Quo.** Maintain existing program including activities related to enforcement of specific State laws and regulations and the administration of two used oil recycling-related tax credits.

6.1.2 **Re-establish Statewide Toll-Free Hotline and Increase Resources for Staffing and Program Implementation.** Allocate resources to more effectively implement existing statutory/regulatory requirements, and to more aggressively promote DIY recycling. Specific options include:

- re-establishing a State-wide toll-free hotline for UOFA recycling information;
- increasing dedicated staffing to:
  - assist in answering the hotline, develop and implement more effective communications on Virginia's waste recycling regulations and tax credit programs,
  - manage retailer relations and point-of-sale sign distribution,
  - serve as liaison with local litter/recycling coordinators, and
  - maintain a DIYer recycling center data base; and,
- appropriating additional funds for printing and distributing new point-of-sale signs and other information material.

6.2 Provide State Support to Promote Voluntary Participation in UOFA Recycling.

Implement options that do not impose new State regulatory or legal requirements. Voluntary program options explored include:

- assist in establishing public collection sites in all localities;
- assist in establishing collection sites in the private sector; and,
- assist in establishing public and private curbside collection demonstration program.

6.3 **Establish a Statewide Program of Mandatory UOFA Recycling.** Implement options that require all localities to establish a collection center or private businesses that sell oil, oil filters, or antifreeze to DIYers above a certain threshold to serve as collection centers.

6.4 **Implement Mandatory Reporting by UOFA Collection Sites.** Implement a State-wide annual reporting requirement for all collection centers that engage in recycling activity in order to monitor whether and how much DIYer material is being recycled. Require local government recycling coordinators, as a condition for continued State funding, to be responsible for collecting information.

6.5 **Institute a UOFA Reimbursement Program for Processors/End Users.** Establish a UOFA reimbursement program similar to Virginia's existing Waste Tire Reimbursement Program with the following features:

- at collection centers, individuals dropping off UOFA would sign a certification form as to the content of the material being dropped off;
- participating centers would not be charged for DIYer materials if a processor picked up the material to reprocess for an eligible end use;
- processors/end users that pick up the DIYer material from the collection centers would use a State form to track costs;
- processor/end user would be reimbursed by the State as long as the UOFA was recycled acceptably, and had a negative market value.

6.6 **Develop End User Markets for Recyclable UOFA.** Strengthen the demand for UOFA recyclables through State procurement practices, tax breaks, or subsidies.

6.7 **Assist Collection Sites in Controlling Liability Exposure and in Managing Contamination.** Addresses the basic liability concerns associated with accepting contaminated DIY material. Specifically, (1) educate UOFA collection sites of existing (legal) liability protection if they follow the federal Used Oil Management Standards, and (2) reimburse collection sites that do end up with DIY-generated hazardous waste through operation of a contamination fund.

6.8 **Strengthen Public Education/Information/Public Relations Efforts.** Implement a State-wide outreach effort designed to increase UOFA recycling and to increase the number of businesses serving as collection centers. This option is detailed in Chapter 7.

6.9 **Miscellaneous Options.** Other options considered include:

- distribution of special DIY collection containers;
- promotion of reusable oil filters; and,
- banning disposal of oil filter and antifreeze in landfills.

It should be noted that most of the options are mutually exclusive. That is, a number of options can be implemented together in a unified program. Table E-4 summarizes option costs and benefits.

TABLE E-4
SUMMARY OF MANAGEMENT OPTIONS

Refer to Chapter Six, page 6.2, for a description of matrix terms and the full Task Six report for methodological descriptions. All figures presented are estimates based on the best information available at the time of this report and may not reflect all potential costs or considerations.

■ Represents potentially significant option hurdles.

OPTION	Feasibility	Ease to Implement	Anticipated Effectiveness	State Budgetary	Staffing*	Legislative	Comments
Continue Existing Program Activities without Change	High	High	Low 781,819 to 1,563,639 gal. used oil recycled per year	Low Existing tax credits and printing costs for signs.	Low None	Low	Includes existing tax credits, retailer sign requirements, and activities of the Virginia Recycling Markets Development Council and the Litter Control and Recycling Fund Advisory Committee to the extent they address UOFA.
Re-establish State-wide Toll-Free Hotline and Increase Resources for Staffing and Program Implementation	High	High	Medium States with hot-lines collect twice the amount of non hot-line states.	Low $105,000	Low 1.5 FTE	Low	Includes establishment of toll-free hot-line plus additional staff for hot-line administration and general State program support.
Assist in Establishing Public Collection Sites in All Localities	High	Medium	Medium 3-4% of unrecovered DIY oil	Medium $389,273	Medium 1 FTE	Medium	Involves funding and assistance to set up public UOFA recycling centers in all Virginia localities.
Assist in Establishing Collection Sites in the Private Sector	Medium	Medium	High 3-9% of unrecovered DIY oil	High $406,292 to $695,440	Medium 1.5 FTE	Medium	Involves funding and assistance to support voluntary efforts by private sector to set up UOFA recycling centers.
Assist in Establishing Public and Private Curbside Used Oil Collection Programs	Low	Low	High	Low Local Pilot Program $142,500	Low 0.25 FTE	Medium	Involves funding to outfit public and private haulers with the capability to pick up UOFA with household recyclables.
Require Localities to Provide UOFA Collection Services	Medium w/ funding Low w/o funding	Medium to Low	High	Medium $439,273 plus	Medium 2 FTE	High	Would require local governments to establish at least one public collection site. Funding would likely come from the State.
Require Private Sector Collection of UOFA	Low	Low	High 5-20% of unrecovered DIY oil	High $15 million plus or minus depending on participation and State share.	High 3 FTE	High	Would require certain retailers of UOFA products to collect recyclable materials.
Implement Mandatory Reporting by UOFA Collection Sites	Medium	Medium	Medium	Low $37,500 plus	Low 0.75 FTE	Medium	Involves a State-wide annual reporting requirement for all collection centers (public and private) that engage in recycling to monitor how much UOFA is recycled.
Institute a UOFA Reimbursement Program for Processors/End Users	High	High	Medium	High $319,040 to 1,146,640 depending on participation	Medium 2 FTE	High	Would establish a reimbursement program similar to Virginia's Waste Tire Reimbursement Program.
Develop End User Markets for Recyclable UOFA	Medium	Medium	Medium	Unknown	Low 0.5 FTE	Low	Includes tax breaks to make recycling more economically competitive and including recycled products in State procurement guidelines.
Assist Collection Sites in Controlling Liability Exposure and in Managing Contamination	High	Medium	Medium	Low $95,940 plus or minus	Low 0.25 FTE	Low	Includes the funding of a liability reimbursement fund and education on existing liability protection.
Strengthen Public Education/Information/Public Relation Efforts	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Would involve any combination of public education and collection center recruitment activities.

*Staffing represents the increase over existing staffing levels.

VII. EDUCATIONAL AND OUTREACH PROGRAM OPTIONS

According to the American Petroleum Institute (API), public education is a critical component of any effort to increase the recycling of UOFA. The 1996 National Used Oil Collection Study found that 82% of states indicated that lack of public education was a major reason why DIYers do not participate. It is also reasonable to assume that there is a positive recruitment effect associated with informing potential UOFA collection sites of the benefits of serving as a collection center. Without adequate infrastructure to support interest in recycling by DIYers (i.e., lack of convenient places to take UOFA), many DIYers may abandon newly fostered recycling habits.

The goal of Chapter 7 is to present options for how to increase the number of DIYers who recycle their UOFA; and, to present options for how to increase the number of collection centers that accept DIYer UOFA.

Public education and outreach measures focused on recycling attempt to change the human behavior. In many instances, people are not aware of the cumulative effects of small acts of pollution on water quality. Others may not be aware that their activities really contribute to pollution at all. Options investigated include the following.

- **Toll Free Used Oil Recycling Hot Line/Web Page**. Virginia could re-implement a toll free 1-800 phone number that would access the location of the most convenient used oil collection site based on a zip code provided by the DIYer. The hot line number could then be included in all subsequent information developed for public outreach.

- **Graphic/Motto**. A standardized graphic and/or logo can provide a means of identifying DIY collection centers and provide a DIYer with a recognizable symbol to remind him/her to recycle used oil. Virginia could design a new logo which could be used on all material produced for the public education program. Logo development could be developed into a school-based contest which would help focus educational efforts on UOFA recycling.

- **Point of Purchase Signs/Information Cards/Decals**. Point of purchase signs are meant to serve as a tool to immediately educate a DIYer about opportunities for recycling. Signage design could be improved to be more retail friendly and to include a toll-free number. Given that the State has not enforced the existing mandatory requirement in the six years since it was implemented, cultivating retailer relations is likely the key to having point-of-purchase signs actually used by retailers.

  Related to the idea of a point-of-purchase sign is a point-of-purchase information card or sticker. The idea behind the card and/or sticker is that they would be provided to the customer at the point of purchase so that they could be taken home and used for future reference.

  A final retail-oriented option is to provide store window or door decals to remind the DIY audience to recycle used UOFA. Distribution would be coordinated with other elements noted above.

- **Event-Related Promotions**. Public information programs could be highlighted with hosted information booths at annual public awareness events such as: Earth Day Celebrations, NASCAR races, and other relevant association meetings and conferences. Currently there are three major NASCAR facilities in the Commonwealth, serving as sites for 8 to 10 nationally televised events.

- **Direct Mail.** Direct mail has the advantage of providing information on recycling directly to the DIYer. It also has the greatest potential for cost-effectively piggy-backing on other government or not-for-profit mailings. For instance, an insert could be sent with utility bills or vehicle registration notices. The State could narrow its focus by partnering with groups that mail to targeted audiences (for instance, Spanish language mailings or mailings targeted towards agricultural interests or race car fans).

- **Media Campaign.** Newspapers, radio, and television may be an effective means to reach the public and provide the greatest potential for creative delivery of the recycling message – particularly to targeted groups.

- **School-Based Public Education**. School-based public education has the dual benefit of educating future and young consumers of oil about used oil recycling and providing an avenue for reaching DIYer parents. Virginia's present curriculum supplement (based on the Standards of Learning for grades K–12) about litter and pollution prevention, "Pollution Solutions: Litter Prevention Activities for Virginia Teachers," makes no mention of recycling used motor oil and antifreeze. Several states have already developed curriculum supplements that could be easily adapted by Virginia as a stand-alone program or as a component of the "Pollution Solutions" program.

Although a well planned and implemented public education campaign can motivate a DIYer to properly dispose of UOFA, a lack of convenient collection centers will inhibit the actual changing of DIYer behavior. Outreach to existing and potential collection centers is one way to maintain and increase the number of facilities collecting UOFA. Outreach options may include the following.

- **Direct Mail**. Although direct mail is an expensive prospect for a general public education campaign, the relatively small number of existing and potential DIYer collection centers makes direct mail a viable opportunity. Direct mail pieces focus on the benefits of being a collection center; examples/testimonials about how recycling UOFA can increase business; options for handling legal and economic liability; and new developments and opportunities (e.g., about any State-funded grant programs for collection centers).

- **Guidebook and Technical Assistance**. Virginia may consider developing a guidebook in order to assist local governments to establish and maintain successful used oil recycling efforts, and to provide prospective collection centers with the information necessary to establish a quality facility.

APPENDIX D
MACREDO GRANT SUPPORT

Virginia Recycling Markets Development Council

May 19, 2000

Ms. Jane Buckley, Director
Institute for Local Self Reliance
2425 18th Street, NW
Washington, DC 20009

Re: MACREDO Proposal (POL:109)

Dear Ms. Buckley:

At its meeting on May 9, 2000, the Virginia Recycling Markets Development Council received a presentation on the Institute for Local Self Reliance's proposal for funding from the U.S. Environmental Protection Agency. The Council understands that this funding will be used to provide ongoing technical and administrative support to the Mid-Atlantic Consortium of Recycling and Economic Development Officials.

Following consideration of the proposal, the Virginia Recycling Markets Development Council endorsed your proposal. The Council hopes that you are successful in obtaining funding to maintain this program.

Sincerely,

John M. Carlock, AICP
Chairman

JMC:fh

cc: Ms. Linda Knapp
Mr. Will Vehrs

c/o Hampton Roads Planning District Commission
723 Woodlake Drive • Chesapeake, Virginia 23320 • (757) 420-8300

APPENDIX E
STATE GOALS FOR RECYCLING
OR
WASTE DIVERSION

State	Rate	Year	State	Rate	Year
Alabama	25%	1991	Montana	25%	1996
Alaska	none	none	Nebraska	50%	2002
Arizona	none	none	Nevada	25%	1994
Arkansas	40%	2000	New Hampshir	40%	2000
California	50%	2000	New Jersey	50%	1995
Colorado	50%	2000	New Mexico	50%	2000
Connecticut	40%	2000	New York	50%	1997
DC	45%	1995	North Carolina	40%	2001
Delaware	35%	2001	North Dakota	40%	2000
Florida	30%	1995	Ohio*	25%	2000
Georgia	25%	1996	Oklahoma	none	none
Hawaii	50%	2000	Oregon	50%	2000
Idaho	25%	1995	Pennsylvania	25%	1997
Illinois	25%	2000	Rhode Island	70%	none
Indiana	50%	2001	South Carolina	30%	1997
Iowa	50%	2001	South Dakota	50%	2001
Kansas	none	none	Tennessee	25%	1996
Kentucky	25%	1997	Texas	40%	1994
Louisiana	25%	1992	Utah	none	none
Maine	50%	1994	Vermont	40%	2000
Maryland	20%	1994	Virginia	25%	1995
Massachusetts	46%	2000	Washington	50%	1995
Michigan	25%	2005	West Virginia	50%	2010
Minnesota	30%	1996	Wisconsin	none	none
Mississippi	25%	1996	Wyoming	none	none
Missouri	40%	1998			

*Ohio rate includes residential only

source: www.epa.gov/epaoswer/non-hw/muncpl/factbook/internet/mswf/prof.htm#top

APPENDIX F
VIRGINIA MUNICIPALITIES
RECYCLING PERCENTAGES

State of Virginia Recycling Survey 1999

Locality	Population	Pounds/Person/Day	Current Recycling Rate
Alexandria, City of	117,00	1.36	38%
Amelia County	10,000	4.93	
Augusta County	63,000	7.83	28%
Bath County	4,200	7.57	
Bedford County	55,000	3.7	
Bedford, City of	6,500	13.19	
Botetourt County	28,000	7	
Bristol, City of			36%
Campbell County	49,000	6.46	
Caroline County	22,000	3.24	
Charlottesville, City of	40,000		35%
Chesterfield County	250,000		35%
Christiansburg, Town of	18,000	2.26	20%
Culpeper County	39,000	4.92	28%
Essex County	9,000	4.57	25%
Fairfax County	912,100	5.43	37%
Fauquier County	53,000	4.45	31%
Floyd County	13,500	3.45	
Fluvanna County	18,600	2.3	7%
Franklin County	44,000	5.85	25%
Frederick County			25%
Goochland County	17,000	1.93	25%
Hampton, City of	77,574	9.54	

State of Virginia Re ,cling Survey 1999

Locality	Population	Pounds/Person/Day	Current Recycling Rate
Hanover County	83,000		15%
Harrisonburg, City of			
Henrico County	240,000	7.42	25%
Henry County	57,000	6.15	40%
Hopewell, City of	22,000	2.84	
Lancaster County			25%
Martinsville, City of	16,000	10.27	30%
Montgomery Regional			
Nelson County	14,000	3.94	
Newport News, City of	170,000	2.22	36%
Nottowaay County	15,200	6.75	25%
Pittsylvania County			
Prince Edward County	17,320	5.09	17%
Prince William County	250,000	4.38	33%
Rappahanock County	7,000	5.4	22%
Richmond County	8,700	2.9	
Rivanna Solid Waste Authority			41%
Roanoke County	81,600	2.62	
Roanoke Valley Resource Authority			8%
Rockingham County	98,500	5.34	32%
Smyth County	33,000	3.65	38%
Spotsylvania County	75,000	3.95	30%

State of Virginia Recycling Survey 1999

Locality	Population	Pounds/Person/Day	Current Recycling Rate
Tazewell County	45,000	4.87	51%
Virginia Beach, City of	432,000	2.41	
Warren County	29,200	3.51	35%
Washington County	51,000	4.08	
Winchester Public Works	22,000	2.89	29%
Wythe County	32,000	4.11	
STATE AVERAGES	**83,273**	**4.81**	**30%**

Note: Rivanna Solid Waste Auohtority; sole respondent reporting MSW Compost Facility. Fee @ $ 23.00/ton.

Source: Draper Aden Associates
1999 Status of Solid Waste Management

APPENDIX G
SCRAP TIRE MANAGEMENT COUNCIL
TIRE "FACTS & FIGURES

Scrap Tire Facts & Figures

Number of scrap tires generated annually (1998): 270 million
Approximate weight of these scrap tires: 3.4 million tons
Percentage of total solid wastes generated: (1998): 1.8%
Number of scrap tires in stock piles: 500 million
Number of scrap tires going to a market (1998): 177.5 million
Number of scrap tires processing facilities: 498
Number of scrap tires used for fuel (1998): 114 million
Number of facilities using tire-derived fuel (1996): 72
Scrap tires used in civil engineering applications (1998): 20 million
Number of scrap tires exported (1998): 15 million
Scrap tires processed into ground rubber (1998): 15 million
Scrap tires punched/stamped into new products (1998): 8 million
Number of scrap tires used in a pyrolysis process (1998): 0
Number of states with scrap tires legislation/regulations: 48
Btu's per pound of scrap tire rubber: 15,000
Average weight of a passenger car scrap tire: 20 pounds
Number of states that ban whole tires from landfills: 35
Number of states that ban all scrap tires from landfills: 8
Number of states with no landfill restricts: 6
Number of States with a fee: 30
States that allow Monofills: 6
Percentage of scrap tires that are passenger car tires: 84
Percentage of scrap tires that are from light and heavy trucks: 15
Heavy equipment, aircraft and off-road tires: 1
Range of weight for truck tires: 40 pounds to 10,000 pounds
Amount of steel in a steel belted radial passenger car tires: 2.5 pounds
Oil (equivalency) in a passenger car tire: 7 gallons
Best ways to reduce the number of scrap tires generated:

1. *Purchase longer-tread life tires*
2. *Rotate tires every 4,000 miles*
3. *Check for/inflate tires to recommended air pressure levels twice a month*
4. *Balance tires when rotating them*

Number of passenger car tires to equal one ton: 100
Specific gravity of tire rubber: 1.15
Number of polymers (rubber) used in tire construction: 3-4
Number of new products that contain recyclable tire rubber: 110 and counting
Fastest growing new markets: playground cover, soil amendments, flooring/matting

For further information please contact: The Scrap Tire Management Council at the following numbers:

John Serumgard:	*(202) 682-4842*	*john@rma.org*
Michael Blumenthal:	*202) 682-4882*	*stmc_michael@rma.org*
Cleo Hall:	*(202) 682-4883*	*stmc_cleo@rma.org*

For more information please check our webpage; **www.rma.org** *then go to Scrap Tire Management Council*