

**REPORT OF THE
VIRGINIA DEPARTMENT OF TRANSPORTATION ON**

**THE DEMONSTRATION PROJECT
IN BATH COUNTY FOR THE
COLLECTION AND RECYCLING OF
USED MOTOR OIL AND ANTIFREEZE**

**TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA**



HOUSE DOCUMENT NO. 10

**COMMONWEALTH OF VIRGINIA
RICHMOND
1996**

Preface

House Bill (HB) 1716 was enacted during the 1995 Session of the General Assembly. This legislation extended the authorized period for the recycling demonstration project in Bath County, which accepts and recycles used motor oil and used antifreeze from the public, through July 1, 1996.

HB 1716 also requested the Virginia Department of Transportation (VDOT) to periodically review and revise its bid procedures and specifications to encourage recycling and to identify the advantages and disadvantages of making recycling services available to the public in those localities where no commercial recycling facilities exist.

HB 1716 is an extension of HB 380, which was enacted in 1994. VDOT's report on HB 380 was submitted to the 1995 Session of the General Assembly in House Document Number 35.

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Executive Summary

The Virginia Department of Transportation (VDOT) has been collecting and recycling used motor oil and used antifreeze from the public at the Bath County demonstration project since July 1, 1993, based on House Bill (HB) 1463. Legislation was approved for each of three years from 1993 to 1995 to extend this recycling project through July 1, 1996. HB 380, enacted in 1994, also requested a statewide survey to identify jurisdictions where no commercial recycling facilities exist. HB 1716, enacted in 1995, requested that the advantages and disadvantages of recycling used motor materials be identified.

The recycling project at Bath County collected 418 gallons of used motor oil from the public from July 1993 through September 1995. For comparative purposes, Advance Auto Parts in Covington and Lexington, Virginia, also accept and recycle used motor oil from the public. On the average, these stores received an estimated 200 gallons per month or approximately 5,400 gallons of used motor oil during this same 27-month period. VDOT also collected 17 gallons of used antifreeze during this period at the Bath County demonstration site.

District field engineers and managers were asked to assess the advantages and disadvantages of VDOT accepting used motor oil and used antifreeze from the public. The Department of Environmental Quality (DEQ) also collaborated in this evaluation. The results showed that there were environmental benefits in the collection of used motor materials from the public, but the disadvantages far exceeded the advantages. Major concerns included the potential acceptance of contaminated material from the public, the resulting disposal and disposal costs of this hazardous material, the high cost of testing for contaminants, and the environmental concerns for air and water quality as well as the possibility of human loss or injury in case of spills. In addition, the use of state facilities and resources in this recycling activity would inhibit the efforts of the business community and the petroleum industry in the privatization of this natural commercial activity.

Local used motor oil and used antifreeze collection programs have a positive and far-reaching impact on the communities they serve. Programs successful at diverting used oil and antifreeze from harmful disposal remove a threat to the environment, avoid cleanup costs, and capture a valuable natural resource for reuse. It is essential, however, that the collection and recycling programs be cost effective based on sound environmental decisions. Benefits and costs should be weighted objectively.

VDOT requires many recycling provisions in its construction and maintenance specifications and is proactively involved with numerous recycling programs. It is not the role of VDOT to implement a recycling program that accepts potentially hazardous materials from the public. Numerous legal and safety issues and concerns are involved if hazardous materials were introduced at the collection sites.

Communities should have proper and adequate recycling programs. The partnering of the industry and the private sectors will maximize the environmental needs of the communities with the costs to manage the programs.

Introduction

House Bill (HB) 1716 is a 1995 legislative act to amend and react § 10.1-1425.8 of the Code of Virginia relating to the recycling of used motor oil and used motor antifreeze. This act is an extension and continuation of House Bills 380 and 1463, which were approved by the 1994 and 1993 Virginia General Assemblies, respectively. HB 1463 approved a demonstration project in Bath County to collect used motor oil and antifreeze from the public. HB 380 authorized the survey of all counties, cities, and towns to determine where no commercial recycling facilities existed.

House Bill 1716 authorized the Virginia Department of Transportation (VDOT) to conduct recycling research projects. Basically, HB 1716 can be divided into three parts:

- The review and revision of VDOT bid procedures and specifications to encourage the use of highway recycled products and materials.
- The continuation of the recycling demonstration project in Bath County to collect used motor oil and antifreeze from the public.
- The identification of advantages and disadvantages of making recycling services available to the public in existing VDOT maintenance areas in localities where no commercial collection facilities exist.

The lead VDOT divisions for all three bills were the Maintenance and Equipment Divisions. The results of the studies were coordinated with the Department of Environmental Quality (DEQ) and VDOT's Staunton District Maintenance Engineer and the Lexington Resident Engineer, who is responsible for the Bath County project. In addition, local Recycling Coordinators participated in the assessment of whether public or commercial recycling facilities were available in their regions. VDOT's field managers and engineers in all nine transportation districts and DEQ evaluated the advantages and disadvantages of accepting used motor oil and used antifreeze from the public. DEQ also participated in researching recycling information, including Internet and used oil literature.

Results

Each of the three distinct parts of HB 1716, which is shown in Appendix A, are discussed separately.

Recycling in Bid Procedures and Specifications

VDOT's Construction Division through its Specifications Section has assisted in the development and Federal Highway Administration (FHWA) approval of a number of specifications that mandate or permit a variety of recycled products and materials. Materials such as rubber tires, plastics, blast furnace slag, and fly ash are but a few examples of recyclable items currently identified in various specifications available for use in standard contract documents or on an "as requested" basis.

Present specifications allow the use of recycled glass as a permissible blend with soil in the construction of embankments. Fly ash and blast furnace slag, fine residue materials of coal burning operations, are specified for use as admixtures in various hydraulic cement mixtures. Crumb rubber, a rubber product made from grinding up automobile and truck tires, also can be used as a permissible blend in several types of asphalt concrete pavement mixtures. They are available upon request and concurrence from the Materials Division.

Under current VDOT specifications, offset blocks used in guardrail installations may be made from recycled plastics. This specification has been included as a supplemental change to VDOT's current Road and Bridge Specifications.

Specifications mandating or permitting the use of recycled materials now under development or nearing completion include the following:

| Recycled Item | Title of Special Provision |
|----------------|---|
| Shredded Tires | Shredded Scrap Tire Lightweight Fills |
| Recycled Glass | Glassphalt (Scrap Glass Additive to Asphalt Pavement) |
| Fly Ash | Stabilized Fly Ash Embankments |

In addition to VDOT specifications which designate or permit the use of certain recycled materials, other products/items, such as sound barrier walls, which are submitted on a design/build concept, have included the use of such materials. Several sound barrier walls employing the use of recycled materials as blends with lightweight hydraulic cement concrete have been approved for use on construction projects and several million square feet of these walls have been erected. Among the recycled items homogenized into such walls are scrap plastics, wood chips, and ground-up rubber tires.

The specifications of VDOT's Construction Division, in concert with other divisions and the construction industry, continues to encourage additional development and use of recycled items. While it appears somewhat simple to specify the use of recycled materials in certain products or construction processes, VDOT's Specifications Section, Materials Division and Construction Division as a whole, have worked with other divisions and agencies to develop and resolve the parameters within which these products can best be used.

Further, the Construction Division will continue to examine its bidding procedures and specifications to mandate or permit the use of recycled products or materials in standard contracts wherever possible and where not permissible, VDOT will endeavor to locate experimental projects where such materials and products can realistically be evaluated for future use.

VDOT is proactively involved with recycled materials and products. They are also actively involved as a member of a recycling committee established by the 1992

General Assembly through Senate Bill (SB) 469. The results of the committee's findings on glass, tires, plastics, yard waste, bituminous concrete, and other recyclable materials were reported to the 1994 Session of the General Assembly. Committee results will also be reported to the 1996 General Assembly Session.

Recycling Demonstration Project in Bath County

HB 1463 and HB 380 authorized an allocation not to exceed \$20,000 annually. Funds were provided from Bath County's secondary construction allocation. VDOT's report on HB 380, which recorded the joint results of HB 1463 and HB 380, stated that \$11,880 was spent for the demonstration project in Bath County in FY 1993-94. These expenditures included costs for planning and development, construction of building and pad, and routine operations.

HB 1716 extended the Bath County project through July 1, 1996 with an annual allocation of \$5,000. Costs from July 1994 through September 1995 totaled \$1,702, including an \$85 per month fee for pick up and disposal of the used motor oil, based on a contract with Valvoline. Because of the low participation, however, Valvoline needed to only make one pick-up of used motor oil during this 15-month period.

The used antifreeze received from the public was recycled with VDOT's recycling contract with Safety Kleen. It should be noted that VDOT is currently using a permanent antifreeze in its vehicles called Nalcool coolant, which only requires an additive every few years to restore rust and corrosion inhibitors.

The total amount of used material collected in Bath County is shown in the following table:

| Amount Collected | July 93-June 94 | July 94-Sept. 95 | Grand Total |
|-------------------------|------------------------|-------------------------|--------------------|
| Used Motor Oil | 210 gallons | 208 gallons | 418 gallons |
| Used Antifreeze | 12 gallons | 5 gallons | 17 gallons |

For comparative purposes, Advance Auto Parts in Covington and Lexington, Virginia, also accept and recycle used motor oil from the public. On the average, these stores received an estimated 200 gallons per month or approximately 5,400 gallons of used motor oil during this same period (July 1993 through September 1995).

The public's comments on the Bath County recycling site were generally favorable. The majority of the comments from citizens indicated that the recycling project was much closer to their home than the 30 miles they would have to drive to Covington, Virginia to recycle their oil. These positive comments were overshadowed, however, by the littering along the roadside of some of the empty recycling containers after the public left the collection site.

As reported in VDOT's report on HB 380, which was submitted to the 1995 Session of the General Assembly, 42 jurisdictions do not have facilities for the collection of used motor oil and 114 localities do not have facilities for the collection of used antifreeze. These locations are shown by county in Appendices B through E.

These results were based on VDOT's coordination with 157 Local Recycling Coordinators representing every county, city, and town in the Commonwealth. Those counties in Appendices B through E marked with "Unknown" indicate that the local Recycling Coordinator did not respond to the survey.

Advantages and Disadvantages of Public Recycling at VDOT Areas

VDOT's field managers and engineers were asked to evaluate the advantages and disadvantages of accepting used motor oil and used antifreeze from the public. In addition, DEQ expressed their opinions on VDOT entering the business of recycling and disposing of used motor oil and used antifreeze from the public. The results of these evaluations revealed that public recycling at state maintenance areas was not an activity that VDOT should be involved because of the potential for liability in the event of spills, contamination by hazardous material, lack of manpower, inconvenient hours of operation, better use of monies to correct/repair highway needs, and the public being better served if recycling was done by the petroleum industry, private sector and/or local government.

Specific advantages and disadvantages:

Advantages

- The public would have a place to dispose of their used motor oil and antifreeze.
- The "economies of scale" should increase at locations that currently must pay for disposal because the volume of collected material would increase; hence, disposal costs should decrease.
- Recycling is beneficial to the environment.

Disadvantages

- Inhibits privatization and the private sector's ability to conduct recycling business.
- VDOT would be liable for all costs if hazardous material was introduced at the collection sites.
- Possible spills would result in expensive remediation and possible soil and water contamination.
- No funding source is identified in the House bill. It may be necessary to redirect transportation funds used for highway safety needs to recycling operations.
- Initial start-up costs of the program are high.
- Cost of testing for contaminants is high.
- Cost of disposing contaminated donations is high.
- Current operating hours of VDOT facilities will not accommodate many citizens. If hours are extended, overtime costs would increase and additional staff may be needed.

- Adoption of new 40 CFR Part 279 *Used Oil Management Regulations*, which establishes a new class of “Used Oil Processing Facilities”, will increase collectors’ costs to conduct additional tests and maintain additional records. These increased costs will most likely be passed to the recycling public.

Recommendations

Considering the overall environmental benefits in recycling used materials and weighing the advantages and disadvantages of operating a recycling program, the following recommendations are suggested:

- The petroleum industry and the private sector should become more active partners and be more involved with recycling.
- Privatization by contracting with a local gas station or convenience store to collect the used oil and maintain records and storage tank systems should be considered.
- The Virginia Recycling Markets Development Council [see Research Information Base section of this report] should continue their positive role in promoting recycling by encouraging the recycling of used motor oil and used antifreeze among businesses, the private sector, and the petroleum industry.
- Collection centers could be established at county school bus equipment shops.
- Local recycling programs in counties and municipalities should be expanded to collect and recycle not only paper, glass, etc., but also used motor oil.
- Establishing programs for recycling used motor oil and used antifreeze from the public is not a transportation issue. Hence, VDOT should not collect and dispose of used motor products from the public. This is especially important when the products have the potential to become hazardous materials.
- DEQ promotes and encourages the industry and the private sector to become more actively involved in recycling. State government should support these business initiatives of industry, but not become directly involved in the business operations.
- Local governments should encourage establishment of recycling programs within the private sector.
- The industry should take a more active role to distribute recycling publications, pamphlets, and information to the public, including Internet information [see Research Information Base section of this report].
- The industry should establish a strategic training program to educate the public about the benefits of recycling and encourage the public’s support for recycling.
- If the recycling program is initiated at the local level, the collection of used antifreeze should not be considered because of the low participation by the public in the Bath County demonstration project.

Research Information Base

An important phase of the evaluation of, and response to, HB 1716 involved research of laws and bibliography references for recycling data, including industry publications and Internet information. These research references were researched by VDOT and DEQ and were used to support the advantages, disadvantages, and recommendations mentioned earlier. This information base can be found in the following sources:

- **Code of Virginia, § 9-145.47.** This section established the **Virginia Recycling Markets Development Council** whose duties include the promotion of recycled materials, the encouragement of public/private market development initiatives, and the identification of financial incentives that may attract new recycling businesses in Virginia.
- **Report of the Virginia Department of Transportation in Response to Senate Bill 469 on the Use of Recycled Materials in Highway Construction (1994)**, reported in Senate Document Number 53.
- **RCRA [Resource Conservation and Recovery Act] and the Vehicle Maintenance Industry: Small Quantity Generator Hazardous Waste Management in Virginia** (1989) by Steven E. Frazier, Chemist at DEQ. This publication cited the new RCRA requirements and reported the results of a waste management study involving vehicle maintenance practices and costs.
- **A Guidebook for Implementing Curbside and Drop-off Used Motor Oil Collection Programs** (1992) by the American Petroleum Institute. This publication establishes local baseline information and identifies major program elements, private sector activities, and existing model programs.
- **Processing Recyclable for Markets: A One-Stop Commodity Guidebook for Local Governments** (1995). This publication issued by the Southern States Waste Management Coalition identifies the market perspective, quality control, processing, shipping, regulations, and contacts/sources for used oil.
- **Internet.** Numerous references to recycling including the **National Oil Recyclers Association (NORA)**, which was established to encourage the proper recycling of used oil, used antifreeze, and other automotive materials. Other sources of Internet information include NORA's officers and regulatory alert, "Frequently Asked Recycling Questions", State Recycling Laws Update, and 18 Waste Exchanges in the United States and Canada.
- **Management of Used Antifreeze** (1995) by Steven E. Frazier, DEQ. This article identified management and disposal techniques and practices.
- **Put Used Oil in Its Place! A Simple Step...to Help the Environment.** A pamphlet published by the Used Oil Recycling Program of the American Petroleum Institute.
- **Collecting and Recycling Used Motor Oil.** A pamphlet published by the American Petroleum Institute.

Conclusions

Local used motor oil and used antifreeze collection programs have a positive and far-reaching impact on the communities they serve. Programs successful at diverting used oil and antifreeze from harmful disposal remove a threat to the environment, avoid cleanup costs, and capture a valuable natural resource for reuse.

It is important, however, that the collection sites be convenient on a daily basis at hours convenient to the user. It is also essential that the collection and recycling programs be cost effective based on sound environmental decisions. Proper controls involving site preparation, construction of concrete pads, spill provisions, test kits for contamination, and tort liability issues must be considered in the strategic analysis for recycling used motor oil and used antifreeze. Benefits and costs should be weighted objectively.

VDOT is a major player in recycling, requires many recycling provisions in its construction and maintenance specifications, and is proactively involved with numerous recycling programs. It is not the role of VDOT to implement a recycling program that accepts potentially hazardous materials from the public. Numerous legal and safety issues and concerns are involved if hazardous materials were introduced at the collection sites. Tort liability claims for personal injury or death to the public and to state employees resulting from the possible spill of hazardous materials would be enormous not only in dollars, but also in the public's perception and faith in government's role to provide a safe transportation system. In addition, the possibility of a hazardous materials spill would require significant remedial action to restore a safe air and a safe ground environment to the area. Costs for this site remedial action would be enormous.

Proper precautions should also include sample testing of collected used materials for contamination. Cost of testing for contaminants would be high and if contaminants were found in the recycled material, the cost of disposing the now hazardous materials would exponentially increase.

The industry and the private business sector are better equipped to assess the risk factors involved in accepting used motor products from the public and are better skilled to control, contain, and dispose of contaminated materials.

There are several benefits in VDOT accepting and recycling used motor materials from the public, but the disadvantages far outdistance the advantages. Communities should have proper and adequate recycling programs. The environment needs proper and adequate recycling programs. The partnering of the industry and the private sectors will maximize the environmental needs with the costs to manage the programs.

VIRGINIA ACTS OF ASSEMBLY -- 1995 SESSION

CHAPTER 109

An Act to amend and reenact § 10.1-1425.8 of the Code of Virginia, relating to used motor oil and motor vehicle antifreeze recycling.

[H 1716]

Approved March 8, 1995

Be it enacted by the General Assembly of Virginia:

1. That § 10.1-1425.8 of the Code of Virginia is amended and reenacted as follows:

§ 10.1-1425.8. Department of Transportation; authority and duty.

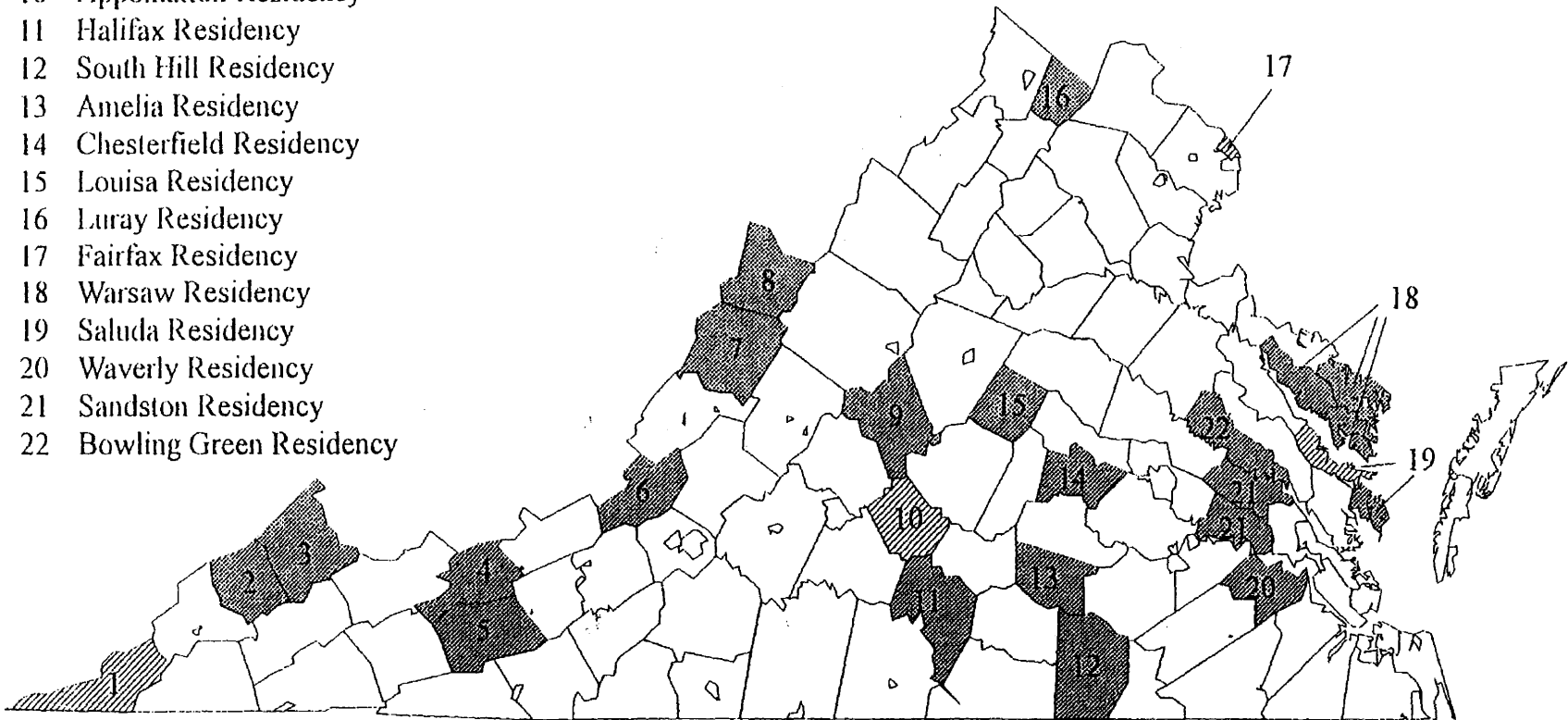
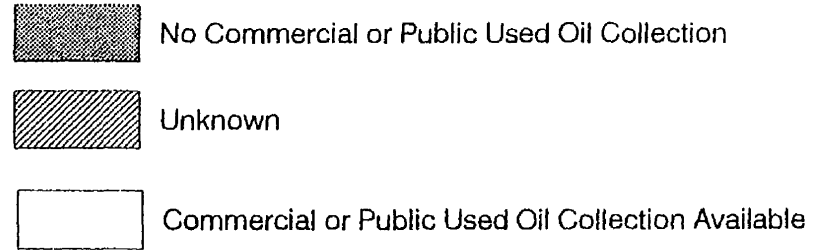
The Department of Transportation is authorized to conduct recycling research projects, including the establishment of demonstration projects which use recycled products in highway construction and maintenance. Such projects may include by way of example and not by limitation the use of ground rubber from used tires or glass for road surfacing, resurfacing and sub-base materials, as well as the use of plastic or mixed plastic materials for ground or guard rail posts, right-of-way fence posts and sign supports.

The Department of Transportation shall periodically review and revise its bid procedures and specifications to encourage the use of products and materials with recycled content in its construction and maintenance programs.




The Department of Transportation with the cooperation of the Department of Environmental Quality shall conduct a demonstration project at one of the Department of Transportation's maintenance area offices in the County of Bath, subject to such conditions as may be determined by the Commonwealth Transportation Commissioner, for the collection of used motor oil and motor vehicle antifreeze from the general public. The used motor oil and motor vehicle antifreeze that are collected shall be recycled or otherwise disposed of in accordance with programs and plans developed by the Department of Environmental Quality under § 10.1-1425.6. Funds for this project ~~will~~ shall be provided from the selected county's Secondary Road construction allocations, not to exceed ~~\$20,000~~ \$5,000 annually. This demonstration project ~~will~~ shall run from July 1, 1993, to ~~June 30, 1995~~ July 1, 1996. The Department of Transportation, with the cooperation of the Department of Environmental Quality, shall survey the counties, cities and towns of the Commonwealth to determine in which localities no commercial facility for the collection of used motor oil and motor vehicle antifreeze exists. *Following such survey the Departments of Transportation and Environmental Quality shall identify the advantages and disadvantages of making available to the public the currently existing used oil and used motor vehicle antifreeze collection facilities at the Department of Transportation's maintenance area offices in those localities where no commercial collection facilities exist.* The study ~~will~~ shall be completed and results reported to the ~~1995~~ 1996 Session of the General Assembly.

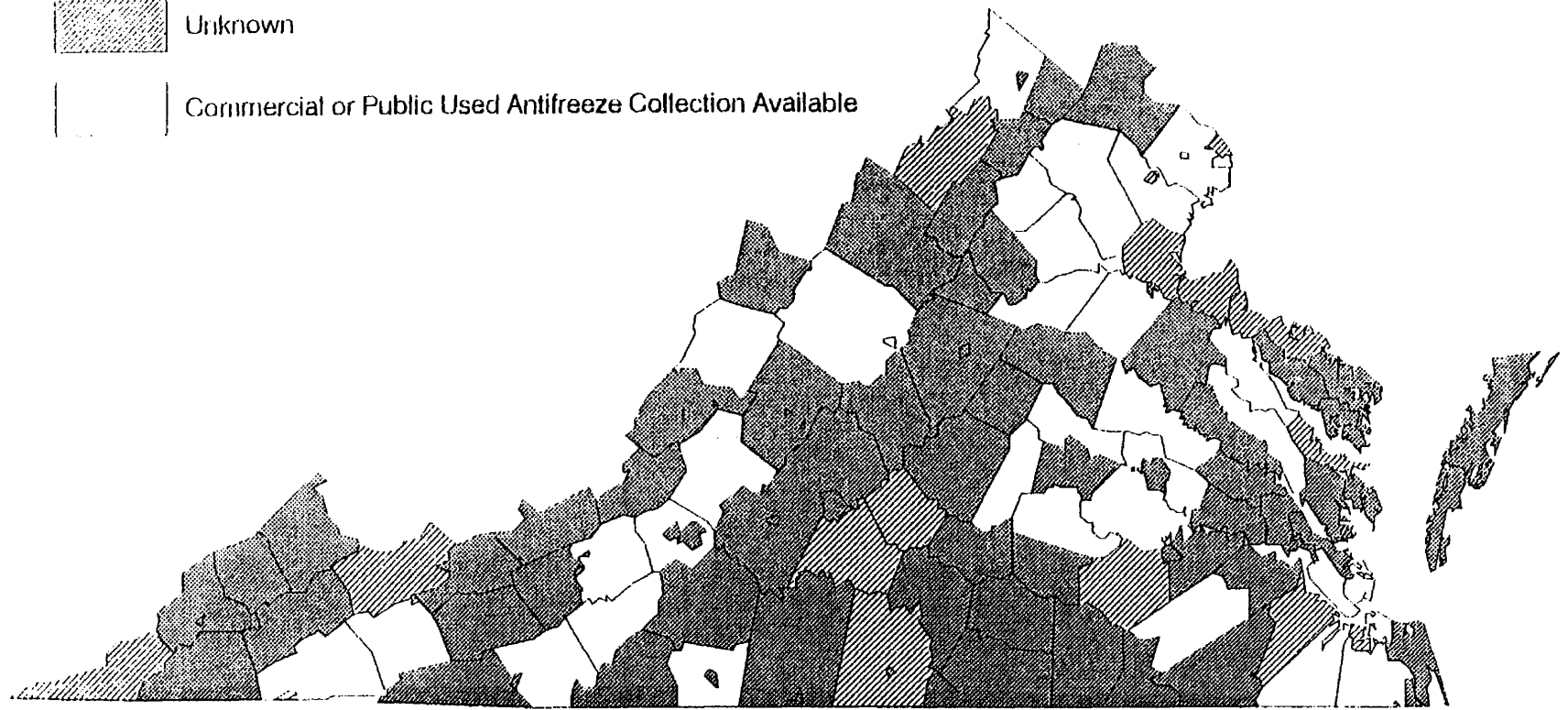
Commercial or Public Used Oil Collection

- 1 Jonesville Residency
- 2 Wise Residency
- 3 Lebanon Residency
- 4 Tazewell Residency
- 5 Wytheville Residency
- 6 Salem Residency
- 7 Lexington Residency
- 8 Staunton (Verona) Residency
- 9 Amherst Residency
- 10 Appomattox Residency
- 11 Halifax Residency
- 12 South Hill Residency
- 13 Amelia Residency
- 14 Chesterfield Residency
- 15 Louisa Residency
- 16 Luray Residency
- 17 Fairfax Residency
- 18 Warsaw Residency
- 19 Saluda Residency
- 20 Waverly Residency
- 21 Sandston Residency
- 22 Bowling Green Residency

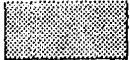




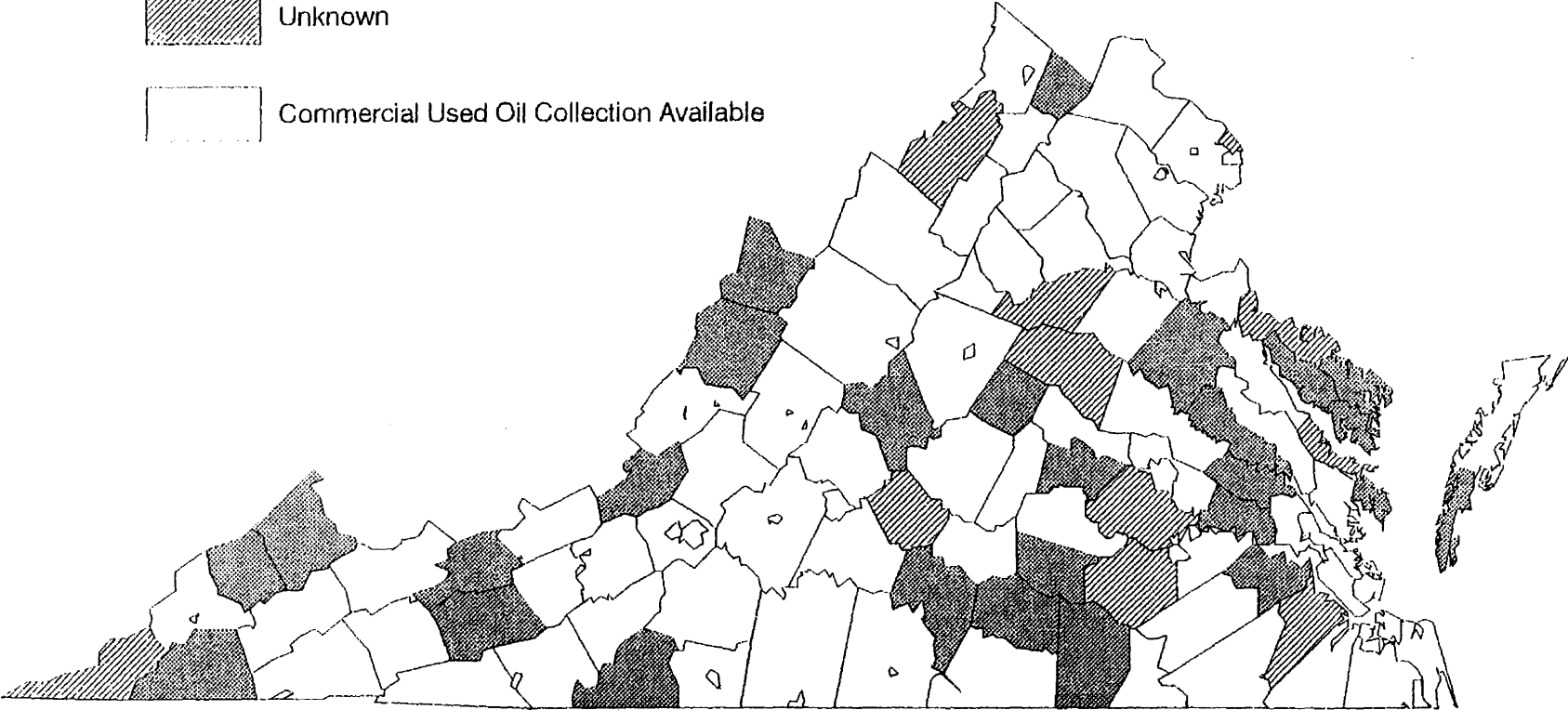
Commercial or Public Used Antifreeze Collection

-  No Commercial or Public Used Antifreeze Collection
-  Unknown
-  Commercial or Public Used Antifreeze Collection Available






Commercial Used Oil Collection

-  No Commercial Used Oil Collection
-  Unknown
-  Commercial Used Oil Collection Available



Commercial Used Antifreeze Collection

-  No Commercial Used Antifreeze Collection
-  Unknown
-  Commercial Used Antifreeze Collection Available

