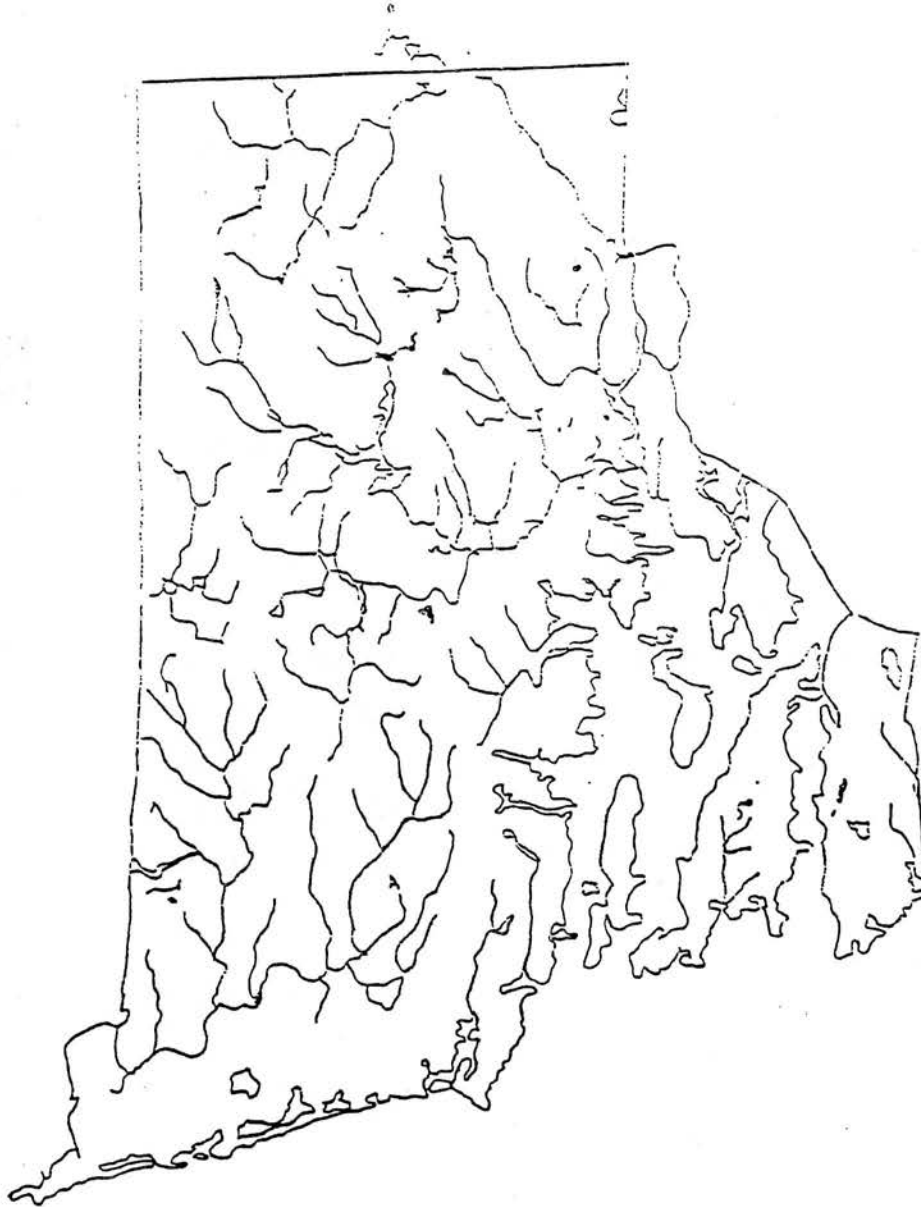


Final Report and Recommendations
Lieutenant Governor's Task Force on Rivers
February, 1990



Roger N. Begin, Lieutenant Governor
W. Edward Wood, Chairman

Recommendations of the Task Force

A Summary

1. The state should establish a Rivers Council within the Rhode Island Division of State Planning to adopt a rivers policy to classify river segments, to coordinate activities and resolve disputes among state agencies relating to rivers, and to foster public involvement in rivers planning and decision making.
2. The Rivers Council should undertake to establish local watershed councils for each of the state's major river systems, with a mandate to ensure the rivers' classifications are achieved and maintained.
3. The Rhode Island Department of Environmental Management should increase efforts to regulate rivers in a comprehensive, integrated manner with emphasis upon controlling changes in flows and promoting public access in accordance with management plans adopted by the Rivers Council.
4. A capital cost-sharing program, that would have the State finance at least 60% of the cost of constructing wastewater projects mandated by state and federal laws should be established.
5. The State should establish a dedicated revenue stream to fund a portion of the state financial participation. The Task Force suggests this revenue could be raised by a tax on water supplies.
6. The Rhode Island Department of Environmental Management should develop additional standards and monitoring programs to ensure that wastewater treatment facilities are properly maintained.
7. The Rhode Island Department of Environmental Management should determine how best to comprehensively address non-point source pollution problems, including examining the feasibility of establishing a dedicated tax on impervious surfaces.

**Lieutenant Governor Roger N. Begin's
Task Force on Rivers**

Final Report and Recommendations

January 1990

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Table of Contents

Chapter 1 - Introduction.....p.1

Chapter 2 - Rivers Protection and Management.....p.4

Chapter 3 - Funding Alternatives for Rivers Cleanup.....p.22

Appendix A: Meetings of the Task Force and its Subcommittees

Appendix B: Transmittal of Report and Report prepared by Camp,
Dresser and McKee, Inc., for the Rhode Island
Department of Environmental Management.

Chapter 1

Introduction

Throughout history, the rivers of Rhode Island have played a central role in the state's commerce and recreation and have been a key ecological link in determining the well being of our natural systems.

In January of 1989, Lieutenant Governor Roger N. Begin convened a Task Force on Rivers in response to two main forces.

First, the withdrawal of direct Federal aid for water pollution control projects left many Rhode Island communities facing clean water needs and mandates which they could no longer afford to meet. Cities and towns, which had planned on a combined 90% federal/state subsidy of mandated pollution control facilities, were now being asked to shoulder the lion's share of the cost. In some cases, there was no realistic fiscal scenario under which a community could meet the challenge.

Second, the Lieutenant Governor realized that Rhode Island citizens are more concerned than ever that their natural environment be preserved for the health, benefit and enjoyment of future generations. Much of this concern has been understandably directed toward Narragansett Bay. The Lieutenant Governor correctly surmised, however, that the condition of the 724 miles of rivers in the state is a major determinant of the environmental health of both the Bay and the upland areas which surround it.

The Lieutenant Governor charged the Task Force to:

- * Examine the feasibility of developing use plans for each of the state's river systems.
- * Identify a mechanism to coordinate existing planning activities to safeguard and enhance river values.
- * Determine the proper degree of state participation in the funding of wastewater treatment projects.
- * Develop a proposal for a funding mechanism to finance wastewater treatment projects.

In response to this challenge, the Task Force first developed a draft document, entitled "A Brief Review of the State of Rhode Island's Rivers", which can be considered to be a compilation of then current information obtained from several sources. The group then created two subcommittees to consider the data contained in this review, to collect additional information concerning issues related to rivers, and to develop recommendations for adoption by

the entire Task Force. The "Subcommittee on River Protection and Management", chaired by Kenneth F. Payne, examined the first two elements of the Lieutenant Governor's charge presented above. The "Subcommittee on Funding Alternatives", chaired by Gary S. Sasse, considered the final two elements of the charge. (Appendix II documents the meetings of the Task Force and its two subcommittees.)

In response to the reports of these two subcommittees, the Task Force has adopted seven major recommendations which are summarized at the beginning of this report. These recommendations have been forwarded to Lieutenant Governor Begin for his consideration and, where appropriate, for the drafting of detailed legislation and/or policy initiatives.

The Task Force firmly believes that formal adoption of the spirit of these recommendations will result in coordinated efforts to safeguard the historical, recreational and natural values of river systems, which have had such an important role in our state's commercial and environmental heritage. Most importantly, these recommendations provide for a continued state/local fiscal partnership in attacking the pollution problems which remain in our rivers. Such a partnership will be essential if we are to overcome the demise of federal water pollution control programs without sacrificing progress in meeting the legitimate pollution abatement goals which have always enjoyed considerable support from Rhode Island citizens.

Chapters 2 and 3 of this report present the full reports of the two Task Force subcommittees, and contain detailed information regarding the Task Force's recommendations.

The Task Force is indebted to the many individuals and organizations which have helped it reach its conclusions and develop its recommendations. Expert testimony was provided to the Task Force and subcommittees by a number of well-qualified officials, including Robert Bendick, Director of the Rhode Island Department of Environmental Management; James Fester, Assistant Director for Regulations for the Rhode Island Department of Environmental Management; Bart Hague, Director of Water Quality Planning for EPA Region I; Judith Wagner, Riverways Coordinator of the Massachusetts Riverways Program; James Pepper, Executive Director of the Blackstone Valley Heritage Corridor Act Commission; Elizabeth Scott, Senior Environmental Scientist from the Rhode Island Department of Environmental Management, Office of Environmental Coordination; Jennie Meyers, Director of the Land Management Project; and Grace Beiser, Principal Planner; Susan Morrison, Chief of Systems Planning; Scott Millar, Principal Environmental Planner; and George Johnson, Principal Planner; all from the Rhode Island Department of Administration, Division of Planning.

The two subcommittees also received research assistance from

the Rhode Island Department of Environmental Management, the Rhode Island Division of Planning, the Rhode Island Public Expenditure Council, Save the Bay, Inc., the Narragansett Bay Commission, the Wood-Pawcatuck Watershed Association, the Audubon Society of Rhode Island, and Gannon Consultancy Group, Inc.

Finally, any success the Task Force has had in responding to the challenges set before it has in large measure resulted from the dedication and hard work of Ms. Cheryl LeClair of the Lieutenant Governor's Office who has acted as staff to the Task Force.

Chapter 2

Rivers Protection and Management

I. Introduction

A. The Charge of the Subcommittee

The subcommittee on Rivers Protection and Management was created by the Lieutenant Governor's Task Force on Rivers in April, 1989 and given the following charge:

1. To determine the scope and type of planning that should be adopted for each river system.
2. To designate responsibility for planning efforts.
3. To develop methods for coordinating regulatory and organizational activities to ensure compliance with planning objectives.
4. To develop recommendations and draft proposed legislation.

II. Findings

A. General Findings

The Subcommittee finds that next to Narragansett Bay and coastal resources, rivers are Rhode island's most significant natural resource. Rivers have played and continue to perform many vital functions, and they have served as a primary natural component in Rhode Island's economic development, especially during the era of the textile industry.

The Subcommittee finds further that, unlike many other states, Rhode Island does not have an affirmative, clearly articulated program to manage and protect its rivers. This is not to say, however, that there are no programs in Rhode Island that serve to protect the state's rivers. Significant among these are the Freshwater Wetlands and the Rhode Island "Pollution Discharge Elimination" programs administered by the Rhode Island Department of Environmental Management (RIDEM). When considered together however, the plain fact emerges that these protection efforts, while good and beneficial, specifically, are fragmented, in some instances contradictory, and overall insufficient in the long run (a) to assure that Federal Clean Water Act objectives will be met and (b) to protect public health, the environment, public investments in improving water quality, and opportunities for recreation. Existing programs were not designed to protect watersheds as systems comprehensively.

To a significant degree, environmental protection regulations are not integrated. For example, decisions to reduce problems associated with disposal of sludge at landfills may inhibit efforts to protect groundwater by requiring more frequent pumping of septic systems. It is entirely possible for environmental protection regulations to work at cross

purposes, and in some instances, to undermine river and watershed protection initiatives.

In New England and across the country, a fresh look is being given to ways in which river systems can be protected. The Lieutenant Governor's Task Force on Rivers has benefited from a review of these regional and national initiatives and Rhode Island's past efforts provide the State with a good foundation of knowledge about rivers to do what is needed to establish comprehensive integrated programs that would both protect the environment and realize the public benefit of the immense investments made to improve water quality by combatting point-sources of pollution.

The National Park Service, U.S. Department of the Interior, has analyzed the reasons for managing and protecting rivers, and in its draft "Handbook: How States Conserve Rivers", it has concluded that there are numerous, compelling reasons for conserving rivers:

- "1) Conserved rivers are an economic boon at the local, regional, or state level.
- 2) Conserved rivers provide low cost flood protection.
- 3) Conserved rivers provide clean water more cheaply than through processing.
- 4) Conserved rivers prevent erosion and losses of irreplaceable agricultural soils.
- 5) Conserved rivers secure commercial fisheries.
- 6) Conserved rivers provide reliable flows for water supply.
- 7) Conserved rivers maintain important coastal areas.
- 8) Conserved rivers save taxpayer dollars in unnecessary expenditures. (Draft, June, 1989,

page 19)."

In 1987, the prestigious President's Commission on American Outdoors, recommended:

"States should inventory their river resources and identify priority candidates for protection. Each state should perfect a comprehensive statewide rivers protection system. Partnerships (should) be formed among private for-profit and non-profit entities to enhance recreation resources, services and facilities."

A national conference held on the 20th anniversary of the adoption of the Federal Wild and Scenic Rivers System Act urged states to:

- "1) Develop statewide river assessments;
- 2) Establish state river conservation policies; and
- 3) Create effective river management programs."

The New England Governor's Conference, which established a subcommittee to examine river protection issues, recently adopted a resolution (No. 98) observing that: "A state rivers program is a formal, state-

sanctioned, comprehensive set of river laws, but stressed by inventories or assessments, capable of providing high grade protection and management for selected rivers. Although 31 states across the country have river laws of one description or another, the quality varies. The best state river programs have nine things in common:

- 1) a policy statement in its statutes enumerating those qualities for which rivers should be protected and managed;
- 2) a bona fide system of protected rivers and segments;
- 3) a selection method based on a statewide river inventory or assessment;
- 4) "non degradation" provisions, which may include prohibitions on dam construction, water quality degradation, channelization, and/or sand and gravel extractions for the most exceptional river segments;
- 5) a "consistency provision", requiring that

- actions of all state agencies be consistent with river management plans promulgated under the program;
- 6) a lead agency to run the program with at least one full-time staff person assigned to the program;
 - 7) authority to protect riverside land;
 - 8) an emphasis on and coordination of existing protective authorities, such as flood plain laws, erosion control regulations, land acquisition, etc; and
 - 9) an emphasis on local government regional watershed planning involving public participation in formulating and carrying out the program."

Rhode Island has invested hundreds of millions of dollars to clean up its rivers and improve water quality. Over the next two decades, it appears that still several more hundreds of millions of dollars will be spent for the same purposes. To what end? Unless rivers are recognized, managed and protected as an important resource, the effect of these massive investments may only be that Rhode Island complies with laws setting standards for wastewater discharges.

When so many millions of dollars are spent, shouldn't the public receive something significant for its investment? The underlying U.S. Environmental Protection standard for water quality in rivers is extremely telling: rivers should, as a general rule, be at least swimmable and fishable. In other words, rivers should be both of high quality and usable by the people who have made the investment.

The Subcommittee on River Protection and Management finds that rivers are a critically important resource,

- environmentally

- culturally
- economically (including recreation)

The Subcommittee further finds that to a significant degree water quality in Rhode Island is affected by action and inaction in Massachusetts; failure to maintain impoundments on the Blackstone River in Massachusetts results in toxic sediments flowing into Rhode Island and vitiating efforts to improve the River's Water quality. Currently, there is no effective interstate mechanism to address water quality and water withdrawal issues.

The Blackstone River Valley National Heritage Corridor program indicates that interstate cooperation is possible and that river systems can be treated as complex entities which require environmental, cultural, and economic values be considered in decision making.

B. Rhode Island Specific Findings

1. Rhode Island lacks a clear, comprehensive, affirmatively articulated policy for the protection and management of rivers and watershed resources.
2. State jurisdiction over rivers, environmentally, culturally, and economically is scattered among various state agencies. In some instances, state policies and plans are conflicting. For example: water quality standards may conflict with recreational use plans and activities; water supply plans may conflict with water quality goals; and

fishery restoration efforts may conflict with hydro-electrical generation proposals. In other instances, plans in which huge investments have been made by the State have not been adopted by the very agency of the state which prepared them. Specifically, the "208 Water Quality Plan", which was prepared by the Statewide Planning Program in the late 1970s, was never adopted by the State Planning Council, in part because agreement could not be reached with the EPA regarding the Council's powers in acting to adopt the plan. The result was, however, a truly unfortunate failure to include the most comprehensive water quality management plans prepared for Rhode Island into the State document which broadened local planning efforts.

3. The State lacks a mechanism for integrating and bringing coherence to its diverse plans and coordinating its water protection programs with those of Massachusetts and Connecticut. A plan adopted by one agency is not, except in special circumstances, binding on another state agency. The potential for conflict among plans is real and the harm which can result is serious. Especially troublesome is the fact that the major implementa-

tion authority for conservation measures in localities is the power exercised by local governments in the areas of comprehensive planning and zoning. Local comprehensive plans and zoning ordinances must be consistent with the State Guide Plan, the elements of which are adopted by the State Planning Council. Historically, the State Planning Council, however, has adopted plans prepared by the Division of State Planning, and in a few instances, plans prepared jointly with other state agencies. For example, the Rhode Island Department of Administration, Division of Planning and RIDEM have cooperated in the preparation of the State Conservation Open Space Recreation Element. With the exception of one developed recently by the Energy Coordinating Council, the State Planning Council does not adopt plans developed by other agencies of State government - including, especially, the Coastal Resources Management Council.

It appears that the RI Division of Planning and RIDEM are now working to have RIDEM's non-point source management and groundwater protection plans integrated into the state guide plan. These efforts are important.

The absence of them in the past has frustrated

communities in their efforts to protect the environment. Although Rhode Island's new comprehensive planning legislation requires communities to consider environmental protection objectives when adopting their comprehensive plans, this cannot be efficient and effectively done unless state environmental program objectives are integrated into the State Guide Plan. The result is that local implementation measures are, at best, not currently part of an integrated system to protect rivers. This lack of consistency among plans and regulatory programs produces a confusing maze of regulations, frustrates rational decision-making, and endangers rivers as resources.

4. City and town comprehensive plans and zoning ordinances do not treat rivers and waterbodies as systems and are not integrated, or even coordinated, on an intermunicipal basis, although rivers and watersheds cross state and municipal boundary lines and what happens in one jurisdiction may have a profound effect on the quality of the river system in another jurisdiction. Historic district zoning appears to offer a valuable, but underutilized, mechanism for preserving areas along rivers as cultural resources.

Ironically, many of Rhode Island's historic districts are "hot spots" of water pollution. Many old buildings have pipes into rivers and septic facilities are often antiquated. The State's current zoning enabling legislation does not specifically authorize cities and towns to integrate state-environmental requirements such as setback requirements into local zoning ordinances. There is no clear authority to zone for purposes of environmental protection.

5. The State has few, and cities and towns have virtually no, personnel resources assigned specifically to developing and implementing comprehensive river protection and management programs. Furthermore, fiscal constraints at both levels of government make the allocation of significant resources to those functions unlikely. Fortunately, however, experience has shown (in Massachusetts, for example) that very modest investments at the state level can result in very large contributions of time, energy and expertise by volunteers. River and pond watch programs are successful. Volunteer and citizens' efforts offer an excellent means to undertake local river protection and management programs on a watershed basis.

6. Rivers and watersheds are interdependent systems. What happens upstream impacts water quality downstream. What takes place in the watershed effects water quality in the rivers. Fragmented approaches to river protection and management are consequently unsuccessful for the most part. Septic waste management districts and facilities, non-point pollution control programs, control of run-off from roads, highways and parking lots, are all necessary to conserve rivers, but are not yet fully implemented in Rhode Island. ISDS regulations are not protective of water quality and river use standards and goals. The benefits of staggering investments in correcting point-sources of pollution (municipal sewage treatment plants are the principal example of a point source discharge) can be lost if non-point sources of pollution are not adequately addressed.

Rhode Island's Freshwater Wetlands Program has been, and continues to be, critical to the maintenance of the quality of many of Rhode Island's rivers. While efforts should continue to make the Wetlands Program's operation fair and efficient, sight must never be lost of the program's critical importance for preserving water quality.

7. River systems serve many purposes: they serve to

recharge drinking water supplies, provide recreational opportunities, include wetlands which mitigate potential damage from heavy rainfalls, are an integral part of the fabric of Rhode Island's cultural heritage, are a habitat for wildlife, have supplied, and to an extent continue to supply, power for industry, are a source of water for agricultural users, and carry and dilute wastes. Many of these uses are competing and it is likely there is insufficient water in many river systems to satisfy the needs, the claims, and even the water rights of all potential users. In Rhode Island, because of the State's hydrogeological characteristics, the groundwaters of aquifers and the water of rivers are continuously interchanging. Distinction between ground and surface waters are frequently artificial. In a very real sense, rivers are a resource which must be allocated among various users. Rhode Island lacks a modern, workable mechanism for accomplishing the allocation. Ancient principles of riparian rights are buried in two centuries of court decisions and public laws. The result is an archaic, truncated labyrinth which appears ill-suited to the challenges which must be addressed in the next decade if Rhode Island's river resources are to be

conserved. The extent of the impoundment of river waters for water supply and the cumulative withdrawal of water from river and groundwater resources can have significant adverse effects on river systems. Conserving water in rivers has economic, recreational, wildlife, aesthetic and environmental benefits.

8. The tools for developing, integrating and analyzing information about river systems are more available than used. The GIS program of the University of Rhode Island, which has been developed through substantial investments by state agencies, could be a great aid to planners and decision makers.

Unfortunately, the basic data about rivers is somewhat incomplete. Significant monitoring gaps exist for many of Rhode Island's rural and most pristine river segments. For some of these river segments, there is little or no monitoring data available. According to RIDEM, its ability to manage the state's freshwater resources has been severely constrained by the lack of water quality monitoring data. Monitoring data are needed to assess the effectiveness of existing pollution control programs and to identify trends in the quality of the state's waters affected by development, among other purposes. The State of

Rhode Island has a responsibility to provide an adequate body of monitoring data.

9. If rivers are to be used as intended under environmental regulations, which strive to make them swimmable and fishable, then public access to rivers is a necessity which demands continuing attention. The open space acquisitions along the Blackstone, Wood-Pawcatuck, Moosup and Queen Rivers demonstrate the great value of such measures. Piecemeal public acquisition may not, however, be sufficient by itself to accomplish long range protection and use objectives.

III. Recommendations

A. Rivers Council

Rhode Island should establish a Council within the RI Department of Administration, Division of Planning which shall have the power to:

1. Prepare and adopt a rivers policy for the State of Rhode Island; said policy shall treat rivers as ecological systems, shall be consistent with U.S. Environmental Protection Agency and other Federal water quality requirements and shall, within 60 days after its adoption, become part of the State Guide Plan. If during such 60 day period, the State Planning

Council, by affirmative action, shall reject all or any portion of the rivers policy, such policy shall become a part of the State Guide Plan if, following the vote to reject the policy by the State Planning Council it has been reaffirmed by the State Planning Council.

Alternatively, clear responsibility for preparing and adopting a rivers policy could be vested in the State Planning Council, itself, if the Council was given a mandate to coordinate plans among state agencies and authority to resolve conflicts concerning the plans.

2. Resolve disputes among state agencies regarding conflicts on river issues, provided however, that this authority to resolve disputes shall not supersede the authorities of the Coastal Resources Management Council.
3. To adopt a plan which classifies all rivers in Rhode Island. Such a classification plan, which shall be coordinated with current water quality classifications, shall contain a minimum of three classes of rivers:
 - a. Pristine Rivers

(e.g. Beaver River, Moosup River, Big

River);

b. Recreational Rivers

(e.g. Wood-Pawcatuck, Blackstone River,
Pawtuxet River, Ten Mile River);

c. Working Rivers

(e.g. Blackstone River, Pawtuxet River,
Woonasquatucket River).

In the classifications of rivers, different sections of a single river may enjoy different classifications as appropriate.

4. To formally recognize and to provide grants to local River Watershed Councils.
5. To make findings and recommendations to state agencies and political subdivisions regarding measures necessary to protect river quality and to promote river uses consistent with the state's river policy and river classification plan.
6. To foster public involvement in rivers planning and decision-making processes, the Council shall:
 - a. Conduct public education programs about rivers.
 - b. Promote, as appropriate, public access to and use of rivers.
 - c. Hold informal workshops and conduct formal

hearings prior to the adoption of:

- * The state's rivers policy.
- * The state's river classification plan or any portion thereof.
- * The establishment of any local River Watershed Council.

B. Staffing

1. Rhode Island should provide the Department of Administration, Division of Planning with \$125,000 for two staff positions to carry out the responsibilities charged to the Rhode Island Rivers Council. The source of funding should be through an annual appropriation, however, the setting-aside of a portion of the revenue generated by the proposed clean water tax for this purpose, for a period not to exceed three years, should be considered as an alternative, if necessary.

C. Local Watershed Councils

1. Shall be established only on a multi-municipal basis unless a watershed is solely within a municipality's boundaries. Such watershed councils may be existing organizations where appropriate. Such watersheds councils shall have all such powers as are normally associated with bodies corporate.
2. Shall have authority to develop plans and

recomendations for the watershed so that the river can achieve and maintain the classifications assigned to it.

3. Shall have standing to present testimony in all State and local administrative proceedings affecting the watershed. Shall make recommendations and take such other action as may be necessary to promote or provide public access to rivers.

4. Shall have authority to support and establish river watch programs for the watershed.

D. The Rhode Island Department of Environmental Management (RIDEM)

1. RIDEM should exercise regulatory authority over rivers in a comprehensive, integrated manner. It should assign staff specifically to assure this integration is accomplished and is conducted in a manner consistent with plans adopted by the Rivers Council.

2. RIDEM should provide technical assistance to the Division of Planning, to cities and towns, and to local watershed councils on river issues.

3. RIDEM should control changes in the flows in rivers. No dams, impoundments, or withdrawals under the jurisdiction of the state of Rhode Island on any river shall be constructed or altered, unless such construction or alteration is specifically

provided in state law, or unless such construction or alteration is specifically permitted by RIDEM and consistent with the state's river's policy and management plan for the river adopted by a River Watershed Council.

4. RIDEM should continue to identify, locate, and in certain instances, maintain public access to rivers.
5. RIDEM should be allocated resources sufficient, so that in conjunction with the Rivers Council, it can provide a comprehensive, scientific information base for decision-making about rivers.
6. RIDEM should address non-point source pollution problems by examining the feasibility of establishing a dedicated tax on impervious surfaces, such as parking lots, roads and highways, as the nature of such surfaces causes runoff to carry surface pollutants into nearby streams rather than to drain into the ground.

Chapter 3

Funding Alternatives for Rivers Cleanup

I. Introduction

A. The Charge of the Subcommittee

The Subcommittee on Funding Alternatives for Rivers Cleanup, which was also created by the Lieutenant Governor's Task Force on Rivers in April of 1989,

was given the following charge:

1. To estimate costs for reaching water quality goals and to determine how the financial burden would be shared under existing policies and programs.
2. To develop an alternate scenario for cost sharing and to test it against water quality goals.
3. To determine whether changes in organizational and financial structures will be necessary to meet the recommended goals.
4. To develop recommendations and to draft proposed legislation.

Water quality is affected by both point and non-point sources of pollution. Therefore, in identifying findings and recommendations, the Subcommittee focused attention on both causes of pollution.

II. Overview

1. Federal Assistance Dries-Up

In 1987, amendments to the Federal Clean Water Act (P.L. 100-4) significantly changed the way local governments will finance the construction of wastewater treatment facilities in the future. No longer will federal subsidies pay for three-quarters of the cost of building such facilities. Between now and 1994, direct federal wastewater grants to localities will phase out. Federal grants that will help capitalize state revolving loan funds (SRFs) will phase in beginning in

1989. Federal assistance for wastewater treatment is not authorized after 1994. Without federal financial assistance, the burden of paying for infrastructure improvements necessary to ensure that Rhode island can meet minimal standards of water quality falls to the state and local governments.

2. State Finance Agency Created

In 1989, the General Assembly created the Rhode Island Clean Water Protection Finance Agency (Chapter 46-12.2 of the P.L. 303) to administer a federally mandated state water pollution control revolving fund (SRF) as well as a local interest subsidy trust fund. These funds were established to provide financial assistance to publicly-owned water pollution abatement facilities, with the primary goal being the maximization of water quality improvement throughout the state.

The SRF is scheduled to be capitalized by a \$40 million bond referendum to be included on the November 1990 general election ballot, and \$45-\$56 million in federal grants depending on federal appropriations.

3. Needs Exceed Resources

In April, 1989, Smith Barney, Harris Upham and Co., Inc. (see RIDEM Wastewater Construction Needs

Report) estimated that total project needs for wastewater projects will total approximately \$1.5 billion in current dollars (inflated) for the period 1989-2005. A later report by this same firm found that Rhode Island's wastewater capital needs could not be funded with existing resources. This conclusion was based upon the following analysis (see, Smith Barney, Harris Upham Co., Inc., RI Department of Environmental Management: Wastewater SRF Program Financial Plan, October, 1989).

"Federal funding for Rhode Island's SRF program has been authorized at a total of \$57 million for the years 1989 to 1994. It is unlikely, however, that more than 80% to 85% of this money will actually be appropriated by Congress prior to the expiration of the authorization. (For example, the appropriation equaled only 78% of the authorized amount for 1989.) To these Federal funds, the State must make a further contribution. At a minimum, 20% of the Federal funding (representing approximately \$11 million) is required by the Clean Water Act as the "State Match". A portion of this funding (through 1991 and one half of 1992 needs) is available from the Rhode Island Clean Water Act Environmental Trust Fund in the form of unencumbered balances in authorized, but unissued, general obligation bonds approved by the voters in 1986. Additional funding, if any, can only be provided by further legislative action including additional bond issue ballot questions and/or by leveraging the value of existing resources to allow for the funding of still additional construction projects. \$40 million of additional general obligation bonds will be on the 1990 election ballots representing \$39 million for the SRF and \$1 million for non-point source implementation...

The Team's analysis indicated that an extension of the current direct loan program operated in conjunction with the Federal funding described above could provide for total funding of not more than \$175 million of project costs by 1995 and not more than \$335 million by 2005. Total construction costs needs during those same time periods, however, are estimated to be in excess of \$600 million by 1995

and \$1.5 billion by 2005.

Attaining the maximum improvement to water quality throughout Rhode Island will thus require funding well in excess of the \$68 million available from the \$57 million in Federal SRF grants and the \$11 million required State matching portion. In general, while additional funding can be generated through the recycling feature of revolving loan funds, still more funding will be needed if the SRF is to be able to address a meaningful percentage of the State's wastewater capital cost needs past 1993.

Such funding can be derived either directly by having the State's voters agree to pay for a much greater share of wastewater costs or in part, by increasing the leveraging of those resources which are made available. Rhode Island needs to avail itself of both to these sources of additional funds."

4. Cost Shifting

The SRF is a loan program. Therefore, funds advanced to units of local government must be repaid. Obviously, even subsidized loans, in lieu of grants, place additional financial burdens upon localities. The extent of this cost shifting is dependent upon the level of interest rate subsidies and loan repayment schedules. Smith Barney has recommended that interest paid by localities for loans of the SRF be held to 4%. A 4 percent interest rate subsidy can result in a 25% to 30% subsidy of total project costs depending upon current market rates for a 20 year repayment schedule at the time of the SRF loan.

The Subcommittee believes that local governments in Rhode Island do not have the resources

to fund the remaining 70% to 75% of capital costs.

III. Point Source Problems

Findings

Analysis of the projected \$1.5 billion in capital needs includes funds for various types of projects, e.g. advanced treatment, CSO's, sludge handling, new sewers and sewer extensions, and maintaining and completing secondary treatment projects.

These projects can be grouped into three categories, as follows:

- * Rebuilding existing facilities;
- * Constructing facilities to meet EPA and RI DEM mandates (i.e. RIPDES permit requirements); and
- * Extending sewer facilities into new areas.

The Subcommittee requested a specific identification of the cost of "mandated projects" included in the October 1989 Wastewater SRF Program Financial Plan. A report prepared by Camp, Dresser, and McKee Inc. (CDM) for (RIDEM) identified estimated needs of \$431.3 million for mandated projects between 1989-2000. These needs were estimated to be as follows:

CSO's \$221.4M

Advanced Treatment 167.3M

Secondary Treatment Reconstruction 42.6M

In addition, the report identified \$197.9 million needed between 1995-2000 for replacement of secondary

treatment plants. Replacement costs are not "mandated projects".

IV. Non-Point Source Pollution

Findings

Controls placed upon industrial and municipal dischargers address the point source pollution problem. Non-point source pollution significantly contributes to the present water quality status in Rhode Island. Thus, a comprehensive approach to non-point source pollution is of equal importance.

According to RIDEM, a preliminary assessment of non-point source impacts to surface waters indicates that 46.6% of river miles, 71% of lake/pond acres, and 7.9% of estuarine square miles are threatened by non-point sources. A comprehensive evaluation of existing non-point source management efforts at the federal, state and local level was included in the final Non-Point Source Pollution Assessment Report completed in 1988.

Major goals of this Non-point Source Management Program are:

1. To strengthen existing regulatory programs to enhance control of non-point sources of pollution through regulatory revisions, and/or adoption of procedures, technical specifications, or guidelines.
2. To establish state regulations to address non-point sources of pollution not presently regulated.

3. To improve inspection and enforcement of state and local regulations governing non-point sources of pollution, and in particular, soil erosion and stormwater runoff from developing areas.
4. To improve coordination between regulatory and non-regulatory programs within RIDEM, and between RIDEM and other state and federal agencies to ensure that policies and programs are consistent with non-point source pollution management activities.
5. To encourage Rhode Island cities and towns to establish local initiatives to ensure protection of surface and ground water resources by increasing technical assistance/public outreach efforts.
6. To strengthen public education efforts so as to increase awareness of the surface and ground water quality concerns associated with various land uses and activities.
7. To further refine the assessment of non-point sources of pollution and targeting of specific surface waters for further management efforts through expansion of natural resources and water quality information based on use of the state's computerized Geographic Information System.

V. Course of Action

The subcommittee recommends the following:

1. Create A Capital Cost-Sharing Program

The State should develop a program to finance at least 60% of the cost of constructing wastewater projects mandated by state and federal laws and regulations. This state level of support could be a combination of grants and subsidized loans to be recommended by RIDEM.

Table 2 of the attached report from CDM identifies total subsidy requirements of \$258.8 million (\$431.3M x 60%) of which \$115.0 million represents resources available through current and proposed bond authorities and federal grants leaving an additional state subsidy requirement of \$143.8 million to fulfill the Subcommittee's objective.

In proposing a 60% state grant-subsidy cost-sharing program, RIDEM should be guided by the following:

- * Utilize a cost/benefit ratio that identifies environmental protection as a goal.
- * Take into consideration issues related to a community's ability to pay and effort.
- * Utilize a mandatory review process to determine whether it would make economical and environmental sense to regionalize.
- * Adopt a policy requiring wastewater treatment facilities to accept septic waste consistent with the design capacity of each facility.

2. Establish A Dedicated Revenue Stream to Fund a Portion of State Financial Participation

To finance a portion of state general obligation bonds for eligible wastewater treatment projects, a clean water protection tax should be levied.

According to information provided in a report by the Rhode Island Water Resources Board to Governor DiPrete in January, 1987, a one cent per one hundred gallon tax on public water system users in Rhode Island would yield \$4.6 million annually.

For example, a water protection tax of three cents per one hundred gallons would yield approximately \$13.8 million annually and would support some \$138 million in state revenue bond authority to be used as a portion of the needed state subsidy.* Based upon an average household use of 75,000 gallons of water per year as indicated in the Report; the impact of a 3 cent per 100 gallon water protection tax would be approximately \$22.50 annually per household.

In order to provide for septic waste treatment capacity, those households not subject to the water protection tax should be charged an annual fee that would approximate this tax. Information, prepared by the Division of Groundwater (RIDEM) for the 1985 USGS National Water Summary, estimates that there are 84,000 Rhode Islanders served by some 31,000 private

* Based upon a 20 year amortization schedule at an interest rate of 7.5%

wells. A water protection tax equal to the \$22.50 applicable to public water system users would yield approximately \$700,000 per year and would support some \$7 million in state revenue bond authority.

3. Protect Existing Capital Investments

If the State of Rhode Island plays a major role in financing sewer projects, it has a responsibility to ensure those facilities are efficiently maintained, financed, and operated. Therefore, RIDEM should require local units of government to provide preventive maintenance programs; establish enterprise funds; implement adequate user fee systems and replacement reserve accounts.

In addition, RIDEM should develop additional standards and monitoring programs to ensure that wastewater treatment facilities are properly maintained. This type of oversight is critical because over \$200 million of the \$1.5 billion in capital needs identified by Smith Barney is for facilities which have reached the end of their useful lives.

4. Comprehensively Address Non-Point Source Problems

Facilities that contribute point source pollutants to the state's rivers are presently regulated through the permitting program administered by RIDEM. An equivalent regulatory mechanism does not yet exist

for non-point source pollutants. Therefore, the Governor and General Assembly should explore the feasibility of providing funds to further assess and prioritize suspected sources of non-point source pollution impairing rivers, to perform design and economic feasibility analyses of various river management alternatives and to undertake retrofits and/or instream restorations.

Appendix A

The following are the dates and the agendas, in summary, of the meetings of the Task Force and two subcommittees.

Task Force on Rivers Meetings

<u>Date</u>	<u>Major Agenda Items</u>
Thursday, February 2, 1989	* Reviewed charge to Task Force as provided by Lt. Governor Roger N. Begin.
Thursday, February 16, 1989	* Heard testimony from Mr. Robert L. Bendick, Director of the RI Department of Environmental Management; Mr. James Fester, Assistant Director for Regulations, RI Department of Environmental Management; and Mr. George Johnson, Principal Planner, RI Department of Administration, Division of Planning.
Thursday, March 9, 1989	* Heard testimony from Mr. Paul Pinault, Deputy Director, Narragansett Bay Commission. * Discussion of Rhode Island Rivers Council Legislation (89-H6596), introduced by Rep. Rene Lafayette and others at the request of Lt. Governor Roger N. Begin. * Reviewed RI Scenic and Recreational Rivers Legislation (89-H5576), introduced by Rep. Weygand and others. Decided to support this legislation. * Discussed <u>Brief Review of the State of Rhode Island's Rivers</u> document.
Thursday, April 13, 1989	* Established two

subcommittees; named one the Subcommittee on Funding Alternatives for Rivers Cleanup and named the other the Subcommittee for Rivers Protection and Management. Selected Mr. Gary S. Sasse, Executive Director of the Rhode Island Public Expenditure Council, to chair Funding subcommittee and Mr. Kenneth F. Payne, Federal Projects Coordinator for U.S. Senator Claiborne DeB. Pell, to chair Protection subcommittee.

Friday, November 17, 1989

- * Discussion and Adoption of Subcommittee Workplans.
- * Discussed two draft reports prepared for the Task Force by the two subcommittees.
- * Discussed report prepared prepared by Mr. Joseph Ridge of Camp, Dresser, & McKee, Inc. for the RI Department of Environmental Management.
- * Heard testimony from Mr. Joseph Ridge of Camp, Dresser and McKee, Inc. and Mr. Robert L. Bendick, Director, RIDEM.

Thursday, December 21, 1989

- * Further Discussion and General Adoption of two draft subcommittee reports.

Subcommittee on Funding Alternatives
for Rivers Cleanup Meetings

Wednesday, June 21, 1989

- * Reviewed charge of subcommittee adopted by Task Force on 4-13-89.

Wednesday, July 12, July
26, and August 16, 1989

- * Organized Subcommittee
- * Identified fact-finding objectives.
- * Discussed facts that that had been gathered.
- * Heard testimony from Dr. Elizabeth Scott, Senior Environmental Scientist, RI Department of Environmental Management, Office of Environmental Coordination and Ms. Jennie Myers, Director, Land Management Project.

Tuesday, September 12, 1989

- * Reviewed the Smith Barney reports which had been prepared for the State of Rhode Island and which identified wastewater treatment project costs.

Wednesday, September 27, and
Thursday, October 10, 1989

- * Reviewed 1st draft report.

Thursday, October 26 and
Wednesday, November 1, 1989

- * Reviewed 2nd draft report.

- * Heard testimony from Mr. Joseph Ridge of Camp, Dresser and McKee, Inc. and Mr. Robert Bendick, Director RI Department of Environmental Management.

Thursday, December 21, 1989

- * Finalized subcommittee report.

Subcommittee on Rivers Protection Management Meetings

<u>Date</u>	<u>Major Agenda Items</u>
Thursday, June 22, 1989	<ul style="list-style-type: none">* Reviewed charge of sub-committee adopted by Task Force on 4-13-89.* Discussed River Planning Issues.* Discussed and Adopted a Work Program for the Sub-committee.
Thursday, July 13, 1989	<ul style="list-style-type: none">* Discussed Existing Planning and Management Agencies.* Reviewed Existing Rivers Related Resources.
Wednesday, July 26, 1989	<ul style="list-style-type: none">* Heard testimony from three senior representatives from the Division of Planning regarding Local Planning, the 208 Plans and State-wide Land Use Policies and Planning.
Thursday, August 17, 1989	<ul style="list-style-type: none">* Discussed other Models for River Management & Planning.* Heard testimony from a representative of the EPA - Region I; the Blackstone Valley Heritage Corridor Act Commission and the Commonwealth of Massachusetts Riverways Programs.
Thursday, September 14, 1989	<ul style="list-style-type: none">* Identified issues which need to be further investigated by the Sub-committee.* Discussed items on the

possible outline of the
subcommittee's report.

- * Discussed timetable for
drafting subcommittee
report.

Tuesday, October 3, 1989

- * Reviewed draft
recommendations
developed by the Sub-
committee on Funding
during its meeting on
9-27-89.

- * Discussed this draft
outline in relation to
possible outline of
Subcommittee on
on Protection and
Management's report.

- * Discussed septic waste
treatment and management
in Rhode Island.

Monday, October 30, 1989

- * Identified and discussed
the findings and
recommendations to be
included in the Sub-
committee's final
report.



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
DIVISION OF WATER RESOURCES
291 Promenade Street
Providence, R.I. 02908 - 5767

Roger N. Begin
Lieutenant Governor
State House
Smith Street
Providence, RI 02903

January 29, 1990

RE: Transmittal of Report

Enclosed for your use is a copy of a report prepared by Camp, Dresser, & McKee (CDM) for DEM. Mr. Gary Sasse, chairman of the Alternative Funding subcommittee of your Task Force on Rivers has previously received copies of the State Revolving Loan Fund wastewater construction financial report prepared by Smith Barney, Harris Upham & Company for DEM. This report provided information on Rhode Island wastewater facility construction costs/needs in a format that was not appropriate for the subcommittee's purposes.

In order to assist your effort, CDM was directed by this office to calculate the figures and issue the report on the funding scenario requested by the subcommittee. I hope this will be useful to your effort.

If I may be of further assistance, please call me at 3961.

Sincerely,

Edward S. Szymanski

Edward S. Szymanski, P.E., Chief

CC: Robert L. Bendick, Jr., Director, DEM
Michael A. Annarummo, Assistant Director, DEM
James W. Fester, P.E., Assistant Director, DEM

ESS/CBM/cbm

**ESTIMATED COST OF A
PROPOSED SPECIAL GRANT PROGRAM**

PREPARED FOR

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

**Camp Dresser & McKee Inc.
December 29, 1989**

1 INTRODUCTION

At the request of the Rhode Island Department of Environmental Management (RIDEM), Camp Dresser & McKee has prepared this report to estimate the size and cost of a grant program which, in combination with the SRF, will provide the equivalent of 60 percent grants for certain wastewater related improvements. To undertake this assignment, we have updated CDM's database on wastewater projects and utilized that database to determine the dollar cost of projects and their cash flow schedule.

As we understand the Task Assignment, the Lieutenant Governor's Task Force on Rivers wishes to propose a grant program in conjunction with the SRF for the categories of "mandated projects." Mandated projects include Advanced Treatment, Combined Sewer Overflows, and mandated secondary treatment plant improvements. The proposed grant program in combination with the SRF is to provide a subsidy to the local community of 60 percent of the total "real world" costs. The costs of the grant program are to be funded by a dedicated annual water use tax.

The following report provides a brief summary of our methodology and results. The balance of the report is organized as follows:

- * Section 2--Assumptions and Methodology
- * Section 3--Results

2 ASSUMPTIONS AND METHODOLOGY

There are a large number of assumptions that were required to provide a first estimate of the grant program. These assumptions include those outlined in RIDEM's letter of November 27 to CDM. These include: no Title II funds are assumed to be available¹; the 1990 bond issue to capitalize the SRF passes; Bay Bonds are used to finance NBC projects; and grant/SRF funds are apportioned over the full period defined by the project schedules.

We have also made a number of simplifying assumptions in order to provide an estimate. Our simplifying assumptions include:

- * All construction schedules and subsidy requirements are stated in inflated (nominal) dollars. This was done because of the difficulty in stating the capacity of and subsidy provided by the SRF in real dollars (constant dollars). Project construction costs are assumed to increase at a 6 percent annual inflation rate.

¹ RIDEM has awarded the balance of its Title II funds to West Warwick for secondary treatment plant improvements. Consequently, the West Warwick project and the associated Title II grant funds are excluded from our analysis.

- * The SRF will provide 4 percent loans to all eligible projects and will provide approximately \$194 million in loans through the year 2000. Approximately 90 percent of the SRF loans are assumed to be for mandated projects. (The amount of SRF funding is based on the October 1989 Final Financial Plan for The SRF prepared by the Smith Barney Consulting team). The SRF is assumed to be capitalized with a \$39 million bond issues and issues loans beginning in April of 1991². The SRF is assumed to provide a 28 percent subsidy.
- * Secondary treatment projects includes ongoing work required by some administrative or judicial enforcement action, with the previously described exception for West Warwick.
- * SRF loans will be targeted to the mandated categories of projects. It is assumed that approximately 90 percent of SRF capacity is utilized for the "mandated" project categories. The balance is assumed to be used for other SRF eligible uses. However, the expenditure pattern for the SRF in this document may be less than that anticipated in the October Finance Plan and may be less than optimal. This may have the effect of overstating the reach of the SRF and understating the required grant program.
- * Advanced treatment is assumed to be required in Cranston, Warwick and West Warwick. These communities will receive grants that provide 100 percent subsidy for advanced treatment planning and design.
- * The NBC will use Bay Bonds to finance projects according to the latest published documentation of the NBC³. Bay Bonds are assumed to provide an effective subsidy of 86 percent.

We utilized a four step methodology to calculate the necessary size of the grant program. First, the project data base developed by CDM for the SRF assignment was sorted to identify projects that fit the mandated categories. The database is a compilation of all known wastewater projects in the State developed from EPA sources, interviews with all of the communities and a review of DEM files. The database includes information on the project, project type, its estimated costs, and anticipated schedule. We then developed a cash draw schedule based on the complexity of the project and adjusted cost figures. This database was updated with the latest CIP from the NBC and provides the cash flow schedules used to calculate the grant need.

² We show SRF loans beginning in 1990. This is based on the assumption that projects follow the anticipated schedule and that eligible projects which commence construction prior to April 1991 are refinanced when the SRF is operational.

³ We have relied on FY 1989/90-FY 1993/94 Capital Improvement Program, Narragansett Bay Commission, Published June 12, 1989.

Second, the amount of subsidy that will be required to meet the 60 percent test was calculated. This is assumed to be 60 percent of the anticipated cash drawn in any year. This might be considered the accrued liability of the State and does not necessarily represent an actual cash expenditure in that particular year.

Third, the amount of subsidy delivered by "existing" programs is calculated on an annual basis. As we understand the bonds for Advanced treatment, they are to pay 100 percent of the costs, up to \$10 million, of planning and designing the needed improvements. Thus, they provide a 100 percent subsidy on those expenditures. The NBC, when using Bay Bonds, is required to pay approximately 14 percent of the debt service on those bonds, this is the same as an 86 percent subsidy.

Finally, we calculated the required new grant program. This was done by apportioning the "existing" subsidy programs over the project cash flow periods and assuming that the new program would fill the gap between the requirement (60 percent of cash flow needs) and the existing programs. So, for example, if project cash flow in a given year was \$10 million, the required subsidy in that year is \$6 million. If existing subsidy programs provide \$3 million, the new grant program is assumed to provide the other \$3 million.

There are several limitations with this methodology, which may suggest the need for further refinement:

- * All projects as a group receive an effective subsidy of 60 percent. Certain communities (the NBC and the Advanced Treatment communities) and certain types of projects (Advanced Treatment) may receive higher subsidies than others. The Task Group may wish to recommend that the new grant program provide a floor subsidy to all projects of 60 percent and allow certain project categories to receive a higher proportion. Alternatively, the Task Group could choose to recommend that the subsidy to any particular community or agency be limited to 60 percent.
- * The estimate of new grant amounts assume that the new grant is delivered as a cash grant at the time cash is drawn to pay construction. The Task Group might consider alternative means of delivering that subsidy, which could have different cost implications. For example, if the SRF loan were to provide 0 percent loans for mandated projects, this would deliver a subsidy of approximately 50 percent⁴. The actual subsidy would be delivered as the community repays the loan. (Although the SRF subsidy account is forward-funded, the total dollar cost is less than the payments to be made because the account earns interest over the repayment period.) The State would still need to appropriate grant monies to fill the gap between 50 and 60 percent.

⁴ On an order of magnitude basis, the SRF, if capitalized with approximately \$120 million in bonds rather than \$39 million could support nearly \$300 million in projects with a zero percent interest rate.

3 Results

The results of our analysis are described in this section and presented in the attached figures. Total needs and needs by project category are shown in Table 1. Needs are estimated to be \$431.3 million. All of the mandated projects are anticipated to be constructed between 1990 and 2000. The total required subsidy is approximately \$258.8 million, which is 60 percent of total new needs. The estimate of the required new grant program should be considered a rough approximation, since its ultimate cost will be affected by the actual construction schedule of projects, the timing and rate at which SRF loans are made, the rate of inflation, and numerous other factors. Based on the assumptions utilized in this analysis, the required new grant program would have a total cost of \$143.8 million, see Table 2. This may range from approximately \$130 to \$160 million depending on the previously described factors. The peak year of the new grant is 1999, when it reaches a level of \$32.4 million.

Figures 1 through 5 graphically present our results for the program.

- * Figure 1 shows the estimated composition of projects by project type. Over the 1989 to 2000 time period, the total value of projects is \$431.3 million (inflated values).
- * Figure 2 presents the same information as in Figure 1 but in a format that makes it easier to see the cost of individual project types.
- * Figure 3 presents the required subsidy against the expected cash flow schedule for construction.
- * Figure 4 breaks out the subsidy by source of subsidy (SRF, AT grant, Bay Bonds, and New Grant).
- * Figure 5 is similar to Figure 4, but presented in a fashion that is easier to identify the annual cost of each element.

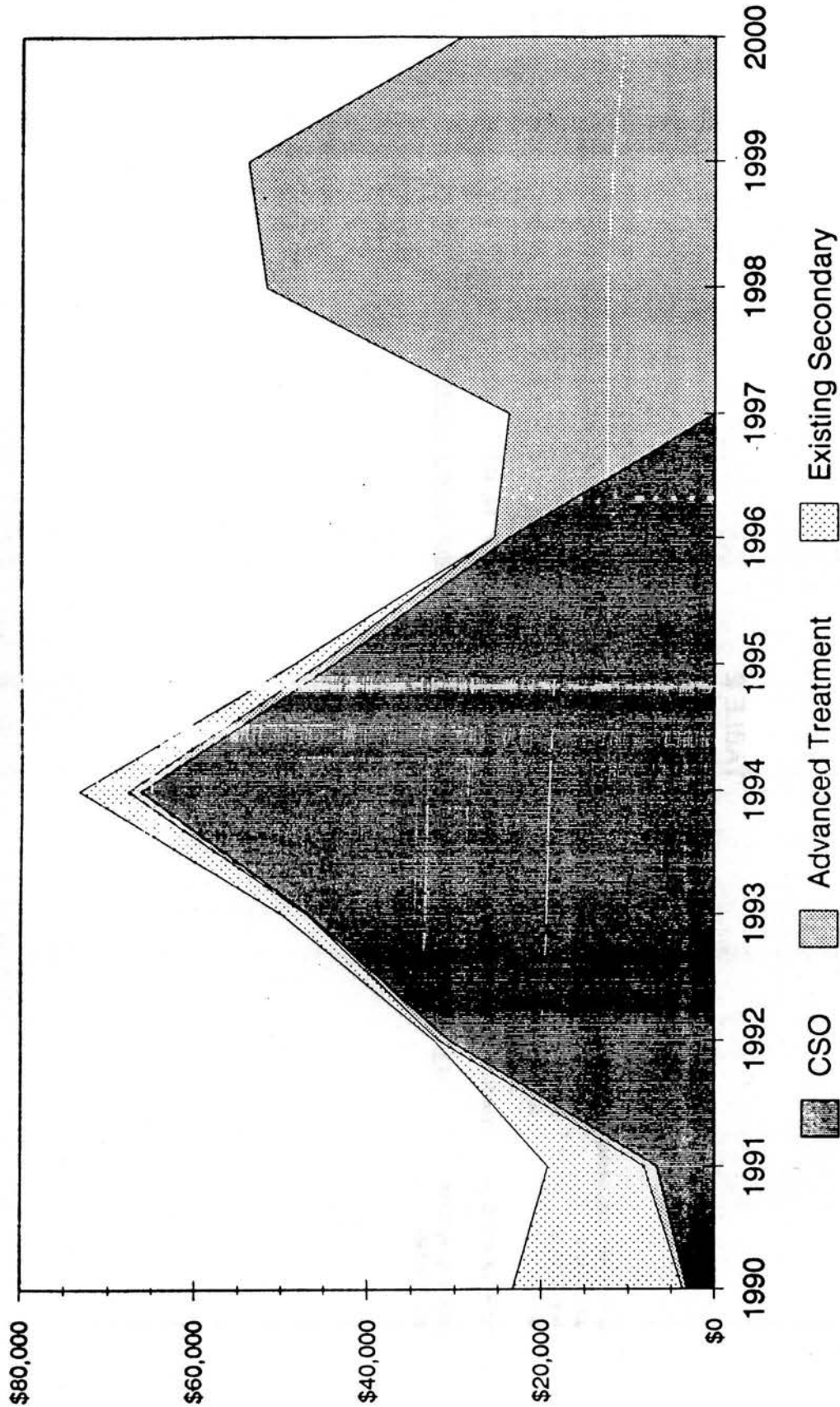
TABLE 1
PROJECT CASH FLOWS

PROJECT CATEGORY	(\$'n 000's)												TOTAL	
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	1989-1995	1996-2000	
CSO	\$3,063.4	\$6,871.9	\$30,737.7	\$46,840.4	\$66,293.0	\$43,866.3	\$23,874.6	\$0.0	\$0.0	\$0.0	\$0.0	\$197,472.8	\$221,347.4	
ADVANCED TREATMENT	\$536.4	\$1,453.9	\$1,143.4	\$248.7	\$1,569.7	\$1,665.3	\$1,649.5	\$23,866.3	\$51,796.0	\$54,033.5	\$29,370.5	\$8,617.5	\$187,333.2	
EXISTING SECONDARY	\$19,673.6	\$11,079.8	\$488.3	\$2,869.6	\$5,544.3	\$2,930.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$42,586.3	\$42,586.3	
TOTAL	\$23,273.4	\$19,205.7	\$32,369.4	\$49,958.7	\$73,407.0	\$48,462.3	\$25,524.1	\$23,866.3	\$51,796.0	\$54,033.5	\$29,370.5	\$246,676.5	\$431,266.9	

TABLE 2
SUBSIDY BY SOURCE
(\$ in 000's)

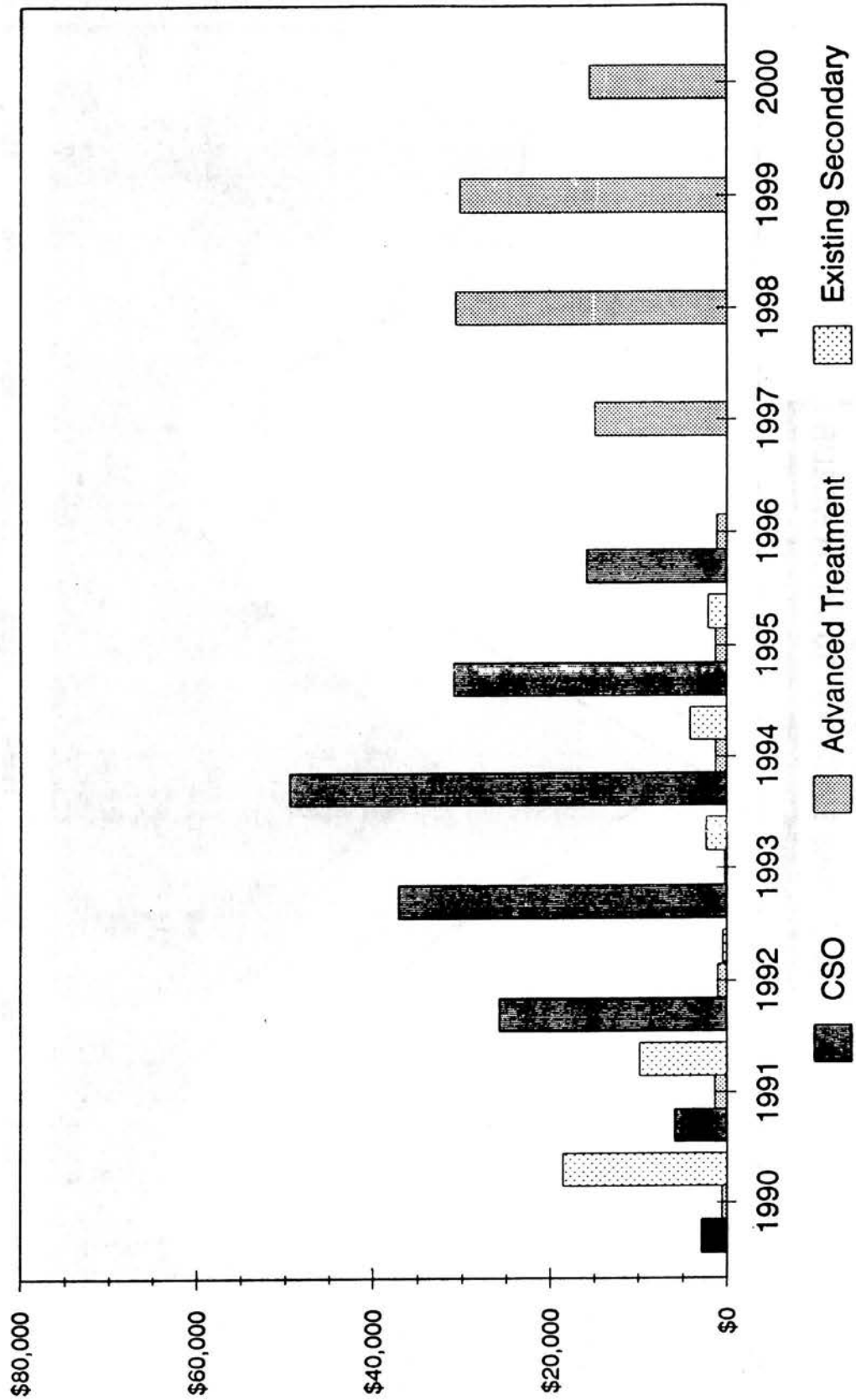
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	TOTAL 1989-1995	TOTAL 1996-2000
NET SUBSIDY DELIVERED													
AT GRANTS	\$536.4	\$1,453.9	\$1,143.4	\$248.7	\$1,589.7	\$1,265.3	\$1,649.5	\$1,733.1	\$0.0	\$0.0	\$0.0	\$8,617.4	\$10,000.0
NBC BONDS	\$9,801.4	\$9,435.1	\$8,541.5	\$23,808.7	\$12,703.9	\$7,351.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$71,441.9	\$71,441.9
SRF	\$8,516.5	\$5,377.6	\$9,063.4	\$13,988.4	\$14,054.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$49,000.0	\$49,000.0
TOTAL EXISTING	\$16,854.4	\$16,266.6	\$18,748.4	\$37,845.9	\$28,327.6	\$9,016.6	\$1,649.5	\$1,733.1	\$0.0	\$0.0	\$0.0	\$127,059.3	\$130,441.9
REQUIRED SIZE OF NEW GRANT	\$0.0	\$0.0	\$673.3	\$0.0	\$15,716.6	\$20,060.8	\$13,665.0	\$12,598.7	\$31,077.6	\$32,420.1	\$17,622.3	\$36,450.7	\$143,822.3

FIGURE 1
TOTAL PROJECT FUNDING NEEDS



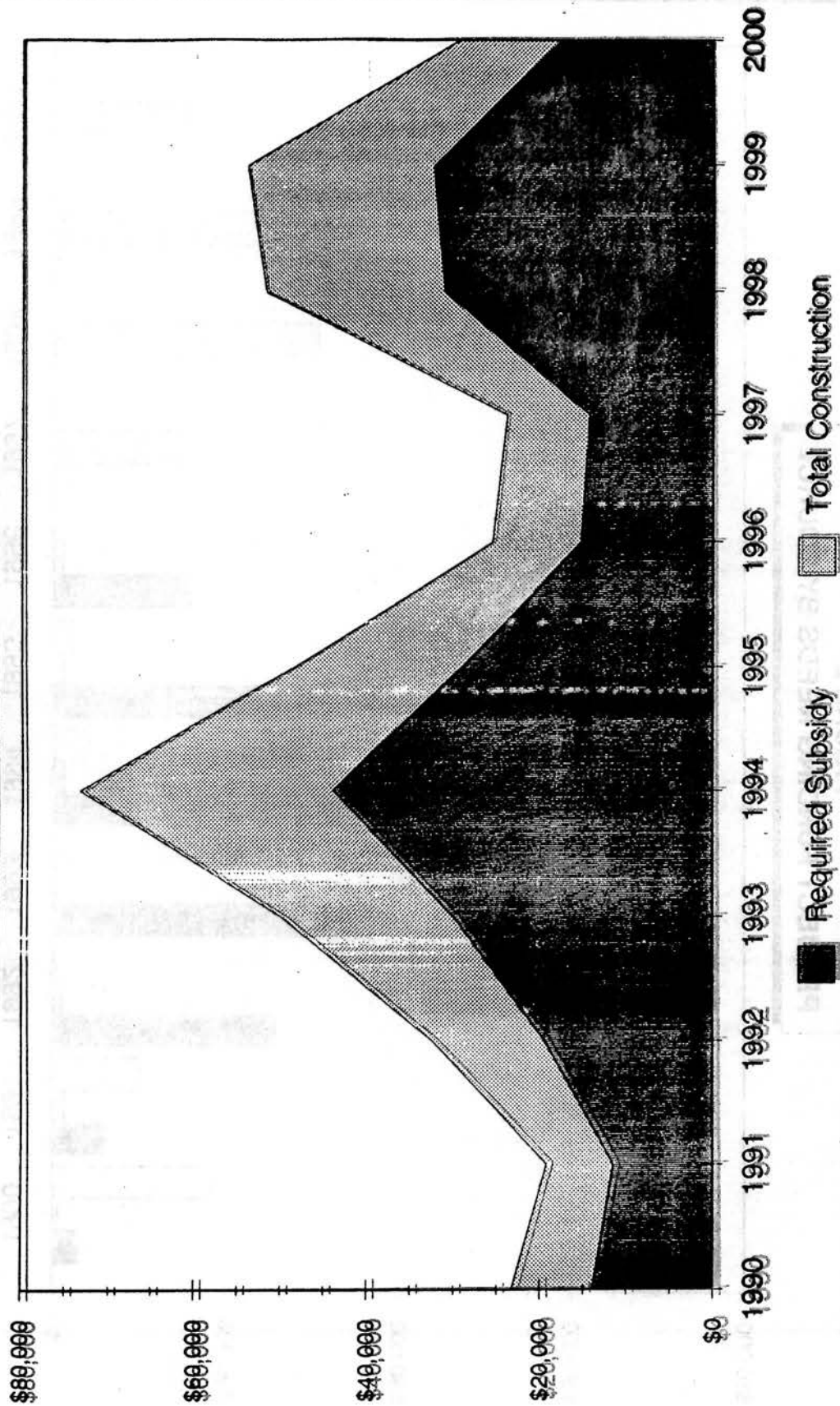
Note: Values are stated in inflated dollars.

FIGURE 2
PROJECT FUNDING NEEDS BY SOURCE



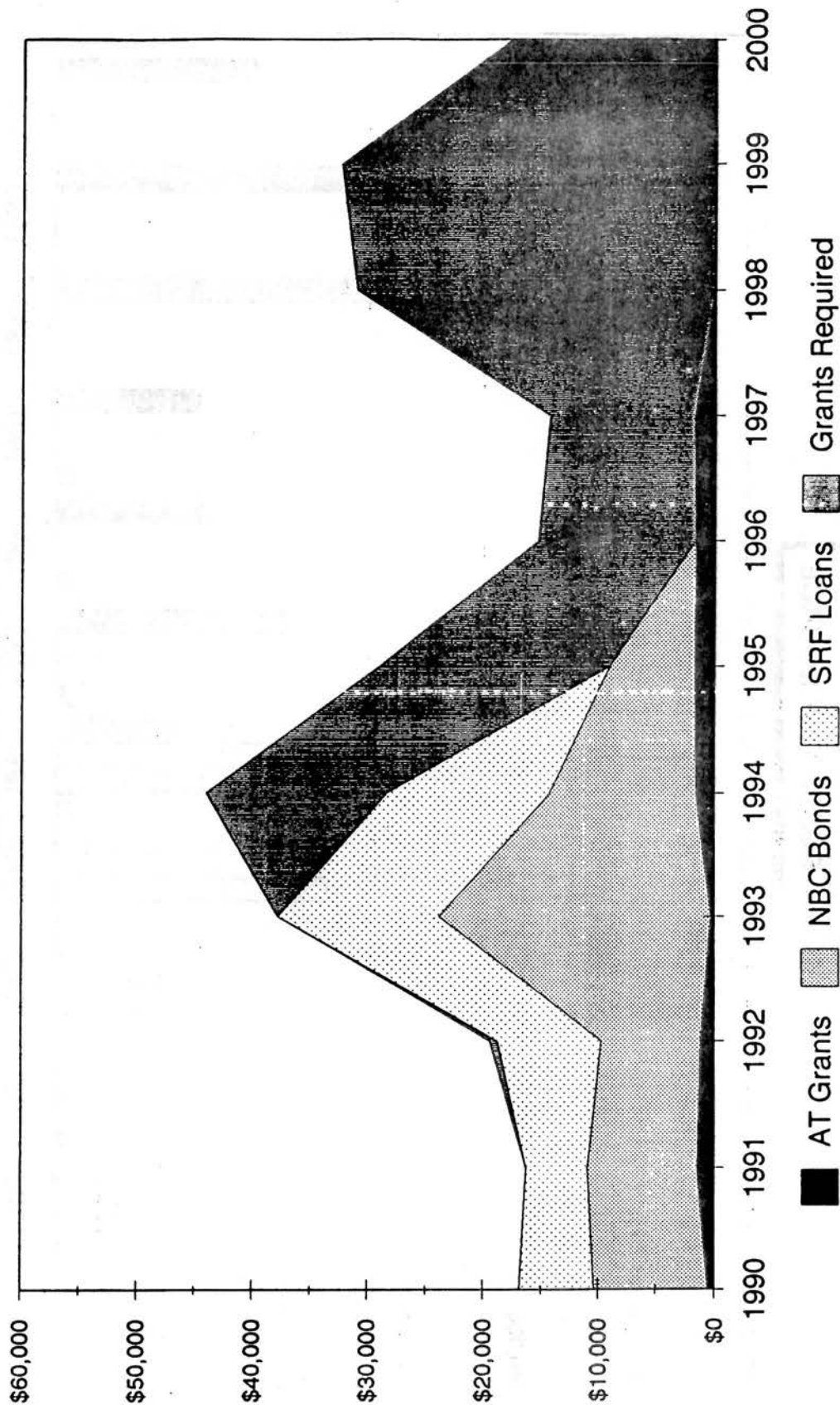
NOTE: Values are in inflated dollars.

FIGURE 3
RELATIVE TO CONSTRUCTION NEEDS



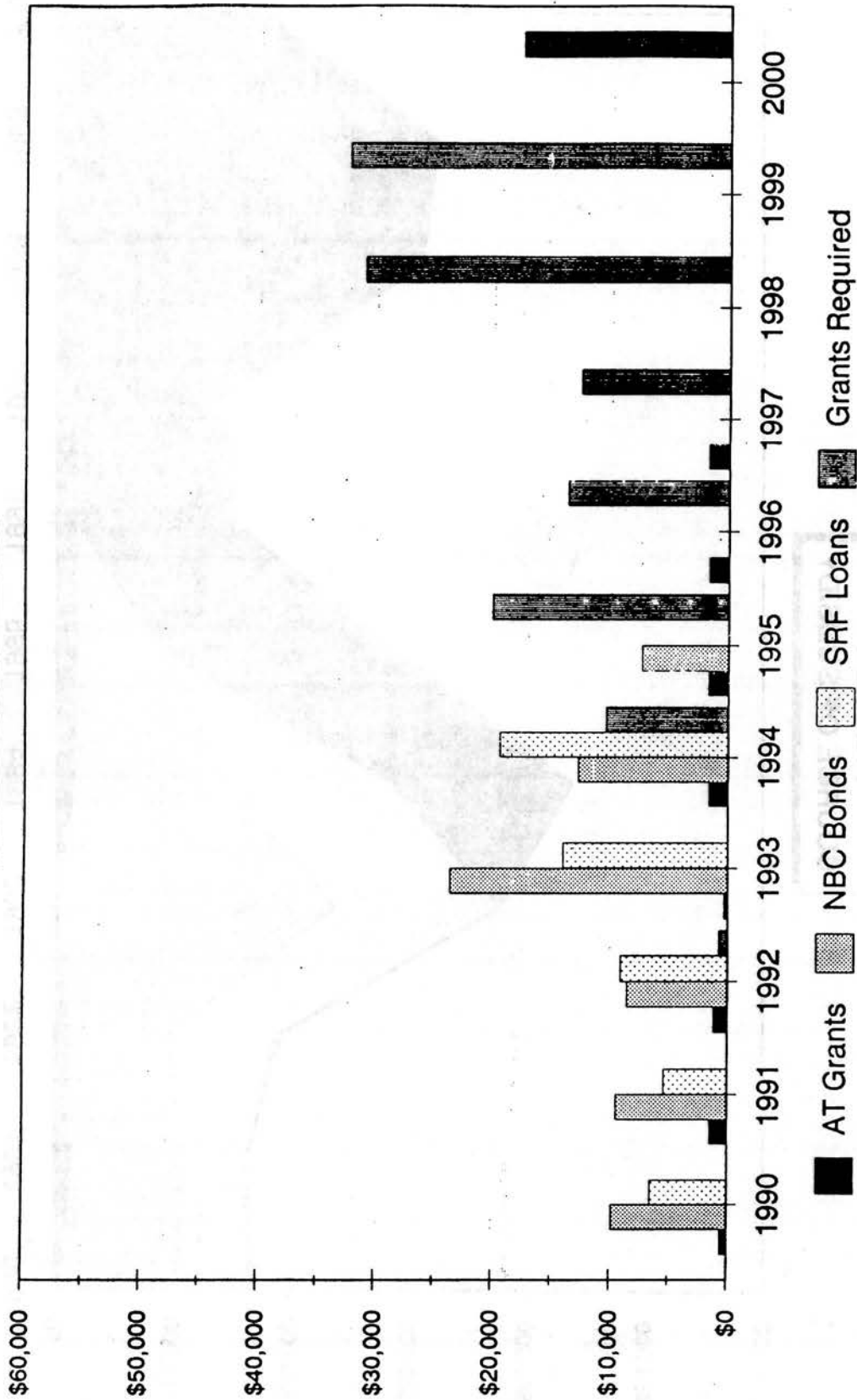
NOTE: Values are in inflated dollars.

FIGURE 4
SOURCE OF SUBSIDY



NOTE: Values are in inflated dollars.

FIGURE 5
SUBSIDY BY SOURCE



NOTE: Values are in inflated dollars.