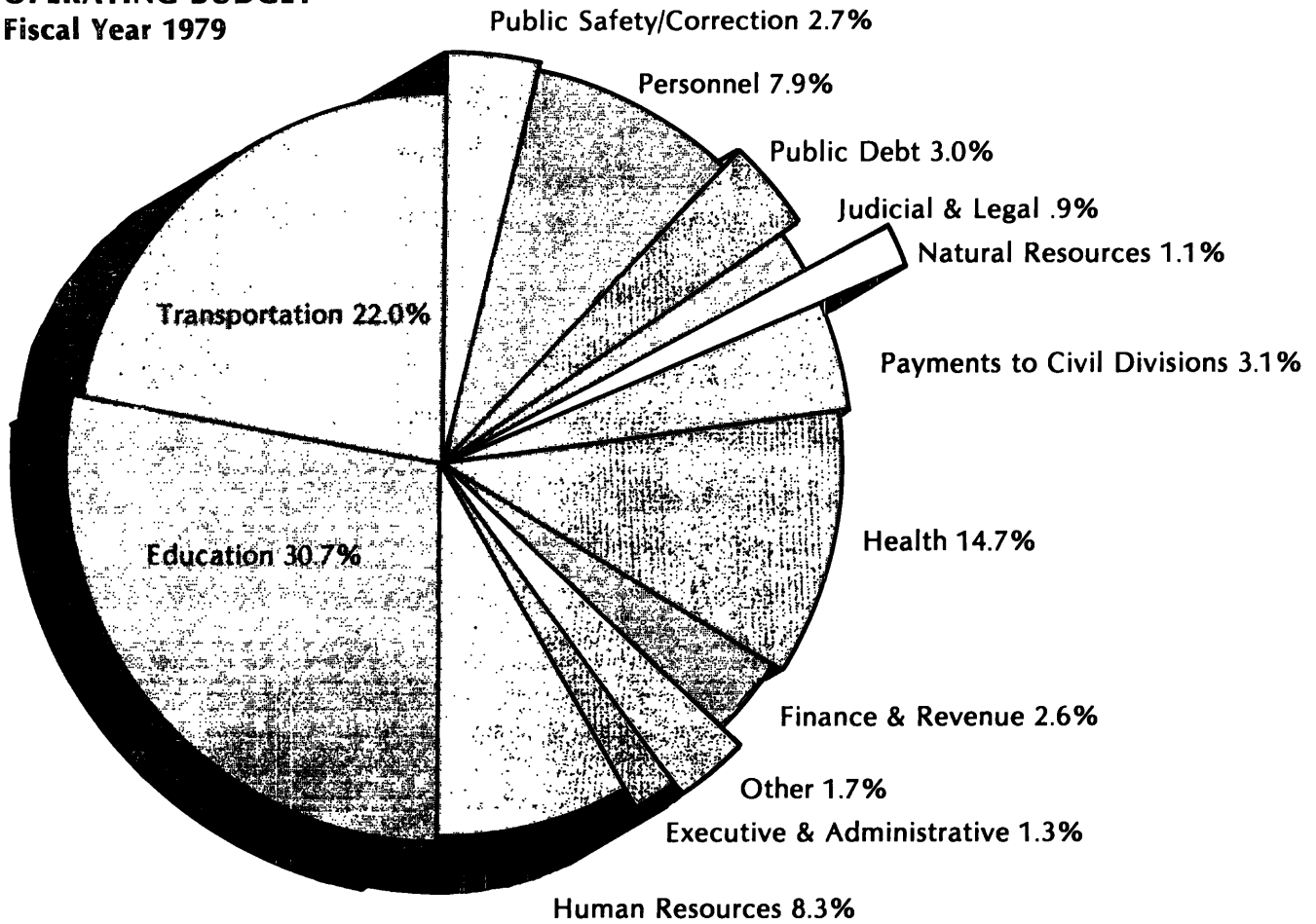


Maryland Department
of
Natural Resources
ANNUAL ACTIVITIES REPORT
FISCAL YEAR 1979

DEPARTMENT OF NATURAL RESOURCES
INFORMATION RESOURCE CENTER
NON-CIRCULATING

**State of Maryland
OPERATING BUDGET
Fiscal Year 1979**



**Department of Natural Resources
OPERATING BUDGET
Fiscal Year 1979**

Office of the Secretary	7.6%	\$3,880,767
Capital Programs	13.3%	6,787,157
Fisheries Administration	7.6%	3,859,834
Wildlife Administration	4.1%	2,068,160
Park Service	12.1%	6,157,054
Forest Service	6.8%	3,454,482
Natural Resources Police	9.8%	5,022,741
Water Resources Admin.	11.0%	5,623,426
Maryland Environmental Service	5.6%	2,866,911
Maryland Geological Survey	2.9%	1,491,209
Maryland Environmental Trust	06%	71,549
Board of Well Drillers	.04%	26,673
Energy & Coastal Zone	19.1%	<u>9,746,121</u>
		\$51,056,184

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State of Maryland

Harry Hughes
Governor

Louis L. Goldstein
Comptroller of the Treasury

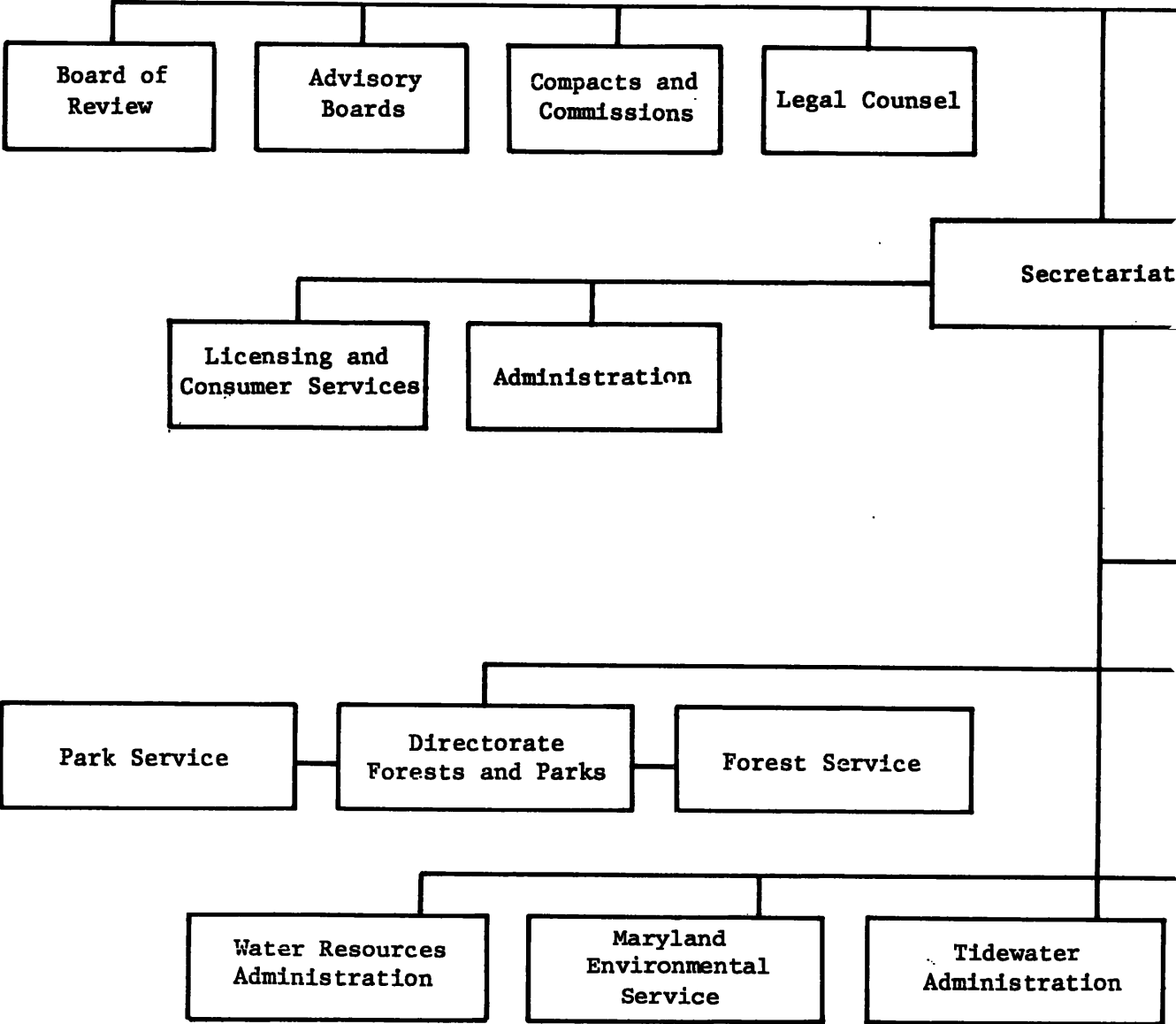
William S. James
Treasurer

Department of Natural Resources

James B. Coulter
Secretary

Louis N. Phipps, Jr.
Deputy Secretary

**DEPARTMENT OF NATURAL RESOURCES
TABLE OF ORGANIZATION**



Environmental
Review

Assistance
and
Information

Maryland
Environmental
Trust

Board of
Well Drillers

Capital Programs

Operations

Wildlife
Administration

Fisheries
Administration

Natural Resources
Police

Maryland Geological
Survey

Energy
Administration

Approved 12/79

REORGANIZATION:

A major reorganization of the Department of Natural Resources occurred in 1979 to further strengthen the lines of communication between operational units. Also as this report was being prepared, plans were being made to transfer some elements of the Water Resources Administration to the Environmental Health Administration of the Department of Mental Health and Hygiene.

As of July 1, 1979, the Tidewater Administration began functioning as the one operational unit within the Department of Natural Resources which will coordinate and be responsible for Bay related activities. Included within the new administration are:

- 1) The Tidal Fisheries Division which includes Shellfish and Finfish management and technological studies;
- 2) The Waterway Improvement Division which includes dredging development of recreational boating access areas, marine services operations (general waterway maintenance conducted in channels, harbors and areas not maintained by the U.S. Army Corps of Engineers) and hydrographic surveying of oyster bars, clam beds, pound nets, duck blinds, etc.;
- 3) The Coastal Resources Division (formerly Coastal Zone Management Unit) — lead agency for coordinating Maryland's Coastal Management Program (CZMP) and
- 4) Boating and Fishing Liaison, and Tidewater vessels.

The new organization will enable Maryland's CZMP to expand its relationships with other state agencies and the 17 local governments affected by the CZMP. The state legislation mandating the Tidewater Administration specifically mentioned Maryland's Coastal Zone Management Program thereby including it for the first time in Maryland's coded laws.

A second significant recognition of the CZMP occurred on August 22, 1979 when Governor Hughes of Maryland and Governor Dalton of Virginia signed an Agreement "Concerning the Management of Resources and Activities of the Chesapeake Bay & Coastal Areas." The Agreement ensures that officials from Maryland and Virginia will meet on a regular basis to coordinate and assess Bay issues to work toward establishing mutually compatible goals, and to assure that Bay related information is exchanged.

Another facet of the reorganization was bringing the Extension Services under the direction of Assistance and Information Services (AIS). Formerly known as Public Information Services, the AIS now provides a more direct contact between those who use the Department's services and those who provide those services. Three Public Affairs Officers, formerly with AIS are now assigned to the Maryland Environmental Service, Water Resources Administration and the Maryland Forest Service.

Also, in line with providing a smoother functioning Department, a physical shifting of personal occurred bringing those functions with personnel at various locations, within closer proximity of each other.

The entire reorganization effort occurred with a minimum of disruption of service and a maximum of amount of benefit to the public and to Department personnel.

OFFICE OF THE SECRETARY

	Budget
General Funds	2,604,375
Special Funds	1,095,172
Federal Funds	134,787
TOTAL	3,834,334
Number of Staff	175

When Chapter 154 of the Laws of 1969 was enacted, the Secretary of Natural Resources consisted of five (5) major agencies (Department of Chesapeake Bay Affairs, Department of Forests and Parks, Department of Game and Inland Fish, Department of Water Resources and the Maryland Geological Survey), with a compliment of 918 positions and a total operating budget of \$11,917,209. General fund support amounted to \$6,436,641, Special Fund expenditures amounted to \$4,801,086 and Federal Fund grants amounting to \$679,482.

Ten years later, this department is responsible for the operation of fourteen (14) agencies (Office of the Secretary, Capital Programs Administration, Fisheries Administration, Wildlife Administration, Park Service, Forest Service, Natural Resources Police, Water Resources Administration, Maryland Environmental Services, Maryland Geological Survey, Tidewater Administration, Maryland Environmental Trust, State Board of Well Drillers and Energy Administration), with positions totaling 1,577, or a 71% increase and a total operating budget of \$51,056,184, an increase of 328%. In 1979, General Fund support has risen to \$20,766,144 or 223% increase, Special Fund support has grown to \$23,693,966 or 394% increase and Federal Fund grants have been enlarged to \$6,549,641 for a 864% increase.

In 1969 the Office of the Secretary started with a complement of nine (9) positions and an appropriation of \$105,568. Ten years later, this same agency has positions totaling 175 with an appropriation of \$3,834,334.

FISCAL AND SUPPORTIVE SERVICES

This program serves the financial needs of the fourteen (14) separate and fiscally independent agencies within this department. In order to accomplish this charge efficiently and economically, the program is further divided into five (5) projects. They are (1) General Accounting, (2) Special, Federal and Capital Fund Management, (3) Supportive Services, (4) Auditing, and (5) Wage and Hour.

General Accounting Section The primary responsibility of this project is to record the annual budgetary appropriation; authorize the Comptroller to disburse funds; receipt and allocate revenues attained; maintain fiscal controls over the operating budget; and provide fiscal information to the unit directors.

During the 1979 fiscal year, the operating budget reflects an expenditure in excess of \$51 million. During the same fiscal year approximately \$30 million was received and allocated to the various units.

Accounts receivable documentation was provided on approximately 1,000 individual accounts in the total amount of \$545,683 of which twelve (12) accounts were with various Federal agencies totaling \$348,123.

Special, Federal and Capital Fund Management It is the responsibility of the Special, Federal and Capital Fund Management project to maintain all fiscal and statistical records for each authorized federal or state project.

Detailed fiscal records were maintained on 489 specific projects totaling \$30,424,482. These projects are financed as follows:

Type	No. of Projects	Amount
Shore Erosion	59	\$ 1,591,567
Waterway Improvement	70	1,441,054
Outdoor Recreation Land Loan	162	9,633,449
General Construction Loan	64	5,580,693
Federal Grants Projects	134	12,177,719

Supportive Services Section The Supportive Services Section has the primary duty to control the real and personal property purchased or otherwise received by each unit within the department. As of June 30, 1979, the value of the land and buildings to which the department holds title exceeds \$163 million with equipment inventory amounting to \$17 million. Included with the equipment are 231 sedans, 700 trucks, and 829 boats.

Another responsibility of this section is to pur-

chase or coordinate the purchase of all equipment and supplies. To accomplish this charge, 3,939 requisitions were prepared, logged, verified and computed.

General supervision of the department's mail distribution is given by this section.

Auditing Section The auditing project is subdivided into three disciplines. They are (1) Internal, (2) Seafood Dealer, and (3) Boat Dealer.

The Internal Audit's responsibility is to insure the accountability of all real and personal property acquired by the department and to inspect each of the more than 300 regional work and service centers for compliance with all applicable fire and safety codes.

The Seafood Dealer Auditor examines the records of those individuals and firms licensed to harvest, sell or pack seafood secured from the waters of the State or imported from out-of-state.

The Boat Dealer Auditor examines the records of those firms licensed to sell, exchange or consign boats to the general public. This section also works closely with the Comptroller of the Treasury to insure the collection of all applicable taxes.

Wage and Hour Section The Wage and Hour section insures timely salary payments to each of the department's employees, maintains an accurate work and leave record for each employee and prepares the personnel section of the operating budget. The section also coordinates the retirement and the health and accident activities between employees and the respective regulatory agency.

Other Services The Office of the Secretary oversees the operation of the departmental mail room. During the 1979 fiscal year, it is estimated that this activity handled in excess of 3,000,000 pieces of mail and more than 20,000 parcels. The expenditure for postage alone totaled more than \$140,000.

DATA PROCESSING

The Data Processing Section provides computer system design, programming and maintenance support for over 30 major applications in the Department. The major activities supported include Licensing and Consumer Services, Fiscal Services and Personnel, in the Office of the Secretary; Fisheries Administration, Wildlife Administration, Forest/Parks Service and Maryland Environmental Service.

Approximately 1500 computer runs per month are made, printing approximately 2,000,000 lines of data on the Department's Remote Job Entry computer terminal installed at the Tawes Building. An additional 1,000,000 lines per month are printed at the

Annapolis Data Center, Comptroller of the Treasury.

There are 10 IBM keypunch machines and six video display terminals in use in the Department to record data that is processed through the various computer systems. Approximately 50,000 transactions per month are keyed by the Department.

In addition, 2 video display terminals are used to instantly display boat and commercial fishing licenses for Licensing and Consumer Services and the Marine Police and financial records for Fiscal Services.

In 1969 the Department had only one major data processing application which was Boat Titling and Registration. The Department depended entirely on the Comptroller's Office Data Center for system design, programming maintenance and data entry support as there were no data processing people employed by this agency.

At that time approximately 40 computer runs per month were made, printing approximately 200,000 lines, all at the data center. Approximately 5,000 transactions per month were processed through the Boating System.

Information on Boat Registration data were printed out monthly and stored in very large binders. There was no up-to-date, instant data available at that time.

NATURAL RESOURCES INFORMATION

Natural Resources Information serves as a public interest center for the Department of Natural Resources. It is the principal departmental area where the public, including the media, obtains information about Maryland's natural resources activities. It is responsible for public informational and educational materials emanating from all agencies of the Department. It also provides consulting services to the public participation programs of the Water Resources, Energy and Coastal Zone and Capital Program Administrations.

It accomplished its mission during FY 1979 by the use of traditional communications tools — media releases, public service spots on radio and television, publication of brochures and pamphlets, direct mail, telephone response, circulation of motion pictures and public speeches.

The Natural Resources Information unit of the Office of the Secretary consists of these sections: General Direction, *Maryland Conservationist Magazine*, Sport Fishing, Public Services and the Library.

General Direction The Office of the Chief of Natural Resources Information is responsible for the

supervision of the administration of the information unit. Among responsibilities is the processing of all mail addressed to the Secretary of Natural Resources and to the Governor of Maryland when it pertains to natural resources matters. Responsibility for maintenance of contact with news media and officials of other federal, state, county and public agencies is centered in the office which must be aware of current issues and developments in environmental matters.

The office also has specific responsibility for dissemination of information on the Fisheries Administration, Wildlife Administration, Natural Resources Police, Licensing and Consumer Services, Geological Survey and Office of the Secretary.

The office coordinates the department Print Shop, assuring a steady flow of work and accuracy in billing by the Department of General Services, provides circulation management for the *Maryland Conservationist Magazine*; coordinates annual Migratory Waterfowl Stamp and the Trout Stamp contests, has responsibility for printing, up-dating and revising the departmental directory and the DNR section of the State Marcom directory, prepares and implements the NRI budget, gives general supervision to secretarial staff, maintains inventory of saleable publications, and compiles the DNR News, an in-house compilation of newspaper clippings.

Library The DNR Library is charged with providing information service to the DNR staff and general public. Activities include maintaining and circulating the agency film collection, organizing the book collection, acting as a repository for agency publications, participating in interlibrary loans, and offering technical and reference assistance whenever possible.

The agency film collection consists of about fifty titles on fish, game and conservation, Film, were loaned to the public more than 650 times in FY 79, a 5% increase over last year.

Subject areas covered in the library collection are the biology, fisheries, water quality and geology of Maryland, with special emphasis on the Chesapeake Bay. The library staff processed and catalogued over 4,000 items this year including publications of institutions such as the U.S. Army Corps of Engineers, Chesapeake Bay Institute, and Chesapeake Research Consortium. DNR publications on file number more than 900 and are available to the public to use in-house or on an inter-library loan basis.

Circulation of library materials averaged 60 items per month reflecting an increase of almost 20% over the previous year.

Inter-library cooperation plays a key role in the librarian's efforts to meet the information needs of the agency. In FY 79, the number of requests made by the staff to borrow materials from universities, research groups and government more than doubled. Of the 284 requests handled by the library, 75% received a positive response.

Technical assistance offered by the library includes locating bibliographic information for the staff, publishing the library newsletter, processing books ordered by individual departments, posting news releases and publications lists, and referring library users to sources of information.

Sport Fishing The Sport Fishing section of Natural Resources Information represents the department at sport fishing and recreation oriented exhibitions, shows, fairs, and tournaments. It is responsible for accurately informing and educating sport fishers and the general public of the status of the sport fishery resources and other water related sports and recreation. It maintains contact with outdoor writers and conducts the fresh and salt water Maryland fishing tournaments.

Public Services This section consists of one public affairs officer, two public affairs specialists and two secretaries. The public affairs officer acts as second in command of the Natural Resources Information Section and serves as public information officer for Maryland Environmental Service, Park Service and Capital Programs Administration. The officer is also responsible for preparing the Annual Activities Report for the Department of Natural Resources and the Monthly DNR Calendar of Events. The public affairs, specialists serve as public information specialists for the Water Resources Administration, Energy and Coastal Zone Administration and the Forest Service.

Maryland Conservationist The editor of the *Maryland Conservationist Magazine*, published six times a year, is responsible for all aspects of the magazine's publication, editing, layout, photos, publicity and contact with writers, photographers and artists.

Graphic Services Two illustrators provide graphic arts services for the agencies of the Department, producing publications, exhibits, etc.

LICENSING AND CONSUMER SERVICES

Licensing and Consumer Services is responsible for administration of the State Boat Act, with regard to titling and registering boats; the recordation of

security interest in vessels, the administration of the licensing, permits, special tax report and collection requirements of Natural Resources Article. This section is responsible for the sale of the Guide for Cruising Maryland Waters and other department publications.

The seven Licensing and Consumer Services' offices processed 797,755 transactions, collecting gross revenues of \$9,858,926. These transactions included application for 744,189 licenses for conservation, preservation and recreation during fiscal year 1979 collecting \$4,146,179 in fees. In processing applications for Maryland Boat Titles \$4,269,240 was collected in boat title tax in lieu of 5% sales tax.

The Licensing and Consumer Services staff also processed 6,410 oyster and clam buyer reports, accounting for 3,803,090 bushels, collecting \$982,013 in severance, import and export taxes.

Validation stickers were mailed free of charge to 27,634 owners of boats registered for three years who were not due for renewals as well as issuing 11,072 original no fee registrations and 5,379 no fee by law commercial seafood licenses (16%). The unit provided liaison and control of 584 boat dealers, 17 hunting and fishing license distributors, 65 consignment agents, 700 cash agents, 158 oyster dealers, 43 clam dealers, 26 non-resident seafood dealers, 177 crab shipper and packers and 24 clerks of the court.

Personnel in the office in Annapolis and in the six regional offices distributed over 1,000,000 information pamphlets dealing with natural resources.

A total of 51,696 citizens personally brought their applications to our offices: 23,669 were served at the Tawes Building in Annapolis; 3,714 at the Regional Service Center in Cumberland; 6,766 at the Regional Service Center in Bel Air; 4,217 at the Regional Service Center in Laurel; 5,693 at the Regional Service Center in Salisbury; 4,016 at the Regional Service Center in Centreville and 3,621 at the Regional Service Center in Mechanicsville.

The Licensing and Consumer Services staff at 6 regional service centers continued administrative support to the units of the Department of Natural Resources, reacting to the regional managers and field personnel. Since the creation of the regional service centers concept, five years ago, the demand for service has doubled, either directly from the public or indirectly through the units based in the center or at work stations in the region.

Receipts from the special funds collected were utilized to support special activities of the Fisheries Administration, the Wildlife Administration, the Forest Service, Natural Resources Police and the Office of the Secretary, Capital Programs Administration.

A summary of sales and transactions for Fiscal Year 1979 follows:

Boat Title and Registration	150,323	\$651,021
Boat Title Tax	27,326	4,269,240
Commercial Fishing Licenses	33,008	449,993
Wildlife Preservation Licenses	1,348	6,418
Hunting Licenses	377,563	2,254,398
Fishing	177,267	715,095
Publications	17,705	67,285
*Potomac River Fisheries	121	5,946
Shellfish Tax	6,401	982,013
**Miscellaneous	6,684	458,512

* Monies collected and deposited for Potomac River Fisheries Commission.

** Includes:

1966 Forest Service Transaction	\$380,512
63 Wildlife Administration Transactions	13,695
584 Boat Dealers	14,725

BOARD OF WELL DRILLERS

The Maryland State Board of Well Drillers issued the following licenses: Master Well Drillers - 175; Journeyman Well Driller - 78; Apprentice Well Driller - 62; Well Driver - 18; Well Digger (hand dug) -3; Pump Installer - 35; Water Conditioning Installer -27; Temporary - 2.

Two board meetings were held. Fifty examinations were given and 2 licenses were suspended.

The Maryland State Board of Well Drillers issued the following licenses:

Master Well Driller	175
Journeyman Well Driller	78
Apprentice Well Driller	62
Well Driver	18
Well Digger (hand dug)	3
Pump Installer	35
Water Conditioning Installer	27
Temporary	18
Examinations given	50
Hearings held	2
License suspensions	2

PERSONNEL ADMINISTRATION

This administration is responsible for all personnel services and transactions for the Department.

Personnel Administration Activities

Transactions Processed	5,952
Appointments	1,410
Permanent	153
Seasonal	1,257
Reclassifications	505
Promotions	68
Position Actions	453
(Abolish/create; Transfer between units, programs and departments; Fund changes)	
Separations	1,414
Miscellaneous	2,102
(Project, Name, Code, Fund, Class and Status Changes; I.D. Requests; Exemption, Bonds, Address and Beneficiary Changes; EOD Inquiries, etc.)	
Reclassification Studies	154
Desk Audits	19
Specification Revised	12
Suggestions Processed	9
Cash Awards	2
Pending	2
Blood Program	
Drives	2
Donators	161
Disbursement	100
Interview and Moving	
Expense Requests	5
Examinations Requested	62
Applicant Activity	
Correspondence	760
Walk-Ins	486
Interviews	202
Telephone Inquiries	1,845
Employee Reviews	124
Employee Grievances	14
(4th and 5th Step Hearings)	
Miscellaneous Campaigns	
(I.D. Program, Deferred Compensation, Flu Innoculations)	
Annual Salary Review	
Requested New Classes	14
Requested Salary Adjustments	14

Approved New Classes	0
Approved Salary Adjustments	8
New Employee Orientations (Tawes Building and 4 Regional Service Centers)	5
Supervisory Training Sessions	6
Career Day Presentations	1

LEGAL SECTION

The Legal Section is comprised of eight Assistant Attorneys General, one of whom acts as Counsel to the Secretary of Natural Resources and is responsible to the Attorney General for the direction and supervision of the entire section. Seven of the assistants work in Annapolis and one is located at the Regional Service Center in Cumberland, Maryland. The legal staff not only represents all of the agencies within the Department when they become involved in litigation, but also supplies all legal advice and approvals inherent in the normal functioning of the Department, such as contracts and regulations approval, interpretation of statutes and regulations, and representation of agency units at administrative hearings.

During Fiscal Year 1979 the attorneys assigned to the Department continued their active role in the formulation and enforcement of laws protecting and preserving the natural resources of the State. The staff initiated 13 cases at the Circuit Court level, closed 23 cases and prosecuted 40 violations in the District Courts. Assistance and advice was rendered in numerous administrative proceedings.

The Legal Section continued to pursue litigation seeking to end the issuance of ocean dumping permits issued by the Environmental Protection Agency to the city of Philadelphia.

Maryland's wetlands laws survived a serious threat when the Court of Special Appeals reversed an earlier decision by the Circuit Court for Anne Arundel County in *DNR v. John J. Hirsch, et al.* The trial Court had dismissed the Department's complaint because the maps delineating wetlands boundaries had not been "recorded" among the land records in the same manner as deeds to real property. On appeal, the appellate Court held that the Wetlands Act required only "filing" in the land records office and not recordation, and that, because the appellees received actual notice prior to filling the wetlands, they lacked standing to challenge any error of the Clerk in filing the maps. The appellate Court, finally, ruled that the State was entitled to restoration of the wetlands that had been illegally filled.

RECREATION AND LEISURE SERVICES

This office was originally established in June 1962. It was not until the 1974 General Assembly that legislation was enacted that authorized the Secretary of Natural Resources to provide technical recreation services. This service was funded for the first time in FY 76.

The unit provides technical assistance to other state departments, counties, municipalities, organizations and individuals in planning, organizing and developing recreational departments, facilities and programs. A state-wide personnel referral program is offered to match leisure services personnel with existing available positions for which they qualify. A resource library is available providing assistance to students and practitioners and a bi-monthly newsletter is published. In addition, state-wide surveys are conducted, educational displays developed and numerous workshops and guest speaking engagements conducted. A number of Technical Assistance Bulletins are currently being developed.

A summary of activities for the previous fiscal year include:

SUMMARY

Conferences & Workshops Attended	29
Workshops/Guest Lectures Conducted	24
Field Visits	152
Educational Displays	16
General Office Visits	55
Assistance (Total)	432
Municipalities (31)	114
Counties (19)	90
Personnel Referrals	106
Committee Assignments	19
Newsletter	
Issues	6
Articles	226

MARYLAND ENVIRONMENTAL TRUST

	Budget	
General Funds		\$71,649.
Special Funds		--
Federal Funds		--
TOTAL		\$71,649.
Number of Staff		5

The Maryland Environmental Trust was created to conserve, improve, and perpetuate the natural, scenic, and cultural qualities of the Maryland environment. Its policies and programs are defined and supervised by a volunteer board of trustees consisting of twelve citizens and three ex-officio members.

The Trust's main activity is to encourage landowners of rare or unique natural areas, productive farmland, large open spaces, waterfront, or scenic areas to donate conservation easements on their land to preclude development of their property. The Trust through its Keep Maryland Beautiful activity works with local organizations to establish programs to conserve energy and materials, improve local environments, and increase citizen-awareness of the need for voluntary stewardship of Maryland's natural resources.

These primary programs were carried out by the Trust's three permanent and two temporary employees. They were aided by members of the Board, who donated their labor to administrative and policy meetings, testimony, research and public appearances. The Trust's seven county committees and two affiliates carried out local and regional programs such as environmental forums, sediment control workshops, testimony at hearings, Save Our Streams projects, and educational programs on wetlands, park planning, and barrier islands.

The Environmental Trust was given six conservation easements on 2105 acres in Montgomery, Frederick, Harford, St. Mary's and Baltimore Counties. Almost all this land is productive farmland. Five other easements were in progress; these will restrict use of 1599 acres in Allegany, Harford, St. Mary's, Montgomery and Calvert Counties.

Trust easement work continued to be successful in the Sugarloaf Mountain area of Montgomery County, with the donation of two easements on 1181 acres there, the Trust now holds easements on 1466 acres around the southern edge of Sugarloaf Mountain. The preservation of these farms directly supplements other state, county, and private preservation programs in that region.

The Environmental Trust is now responsible for thirty easements in sixteen counties and Baltimore City which restricts use of 8,253 acres. In FY 1979 the Environmental Trust held conservation easements on 6,149 acres. This is a 34% increase in one year.

During this period the Trust continued its second solicitation of land owners in the Chesapeake Bay region. This solicitation is based on a priority list of natural areas according to their ecological importance or rarity and a priority list of the areas' vulnerability to destruction or degradation. Preparation included consultation with all state, local and federal agencies with land acquisition programs in Maryland so that the Trust's easement program will complement other land preservation programs.

In FY 1979, the Trust sent letters and copies of its booklet, *Conservation Easements: To Preserve A Heritage*, to 1371 landowners of 62 natural areas in Charles, Calvert, and St. Mary's Counties. A similar mailing is being prepared for Somerset, Wicomico, Worcester, and Dorchester Counties.

Keep Maryland Beautiful continued its work for the Coastal Zone Management Unit of the Department of Natural Resources organizing the public presentation of "Guale" a film on estuarine resources, problems, and solutions. The Trust is collaborating with more than 100 local conservation, educational and civic organizations to sponsor the presentation. "Guale" was shown 45 times to a total of 2,744 people. Audiences were asked to make detailed responses about the film, so that the information and opinions can be used in producing a similar film about the Chesapeake Bay.

The Trust's Keep Maryland Beautiful activity continued to distribute copies of its Earth Satellite poster "Our Shores Survived the Winter of '77... Can They Survive Us?" It also distributed copies of *How To Report Pollution in Maryland* and the *Maryland Environmental Directory*.

In honor of Margaret Rosch Jones, the late director of Keep Maryland Beautiful, the M.E.T. Board of Trustees instituted the Margaret R. Jones Award for outstanding service by an organization, firm, or individual in helping to preserve and enhance Maryland's environment. The first award was made to the Manhattan Beach Clean-Up Committee, in Anne Arundel County, for the group's unusual thoroughness and sensitivity in motivating people of all ages to attack the causes, not just the symptoms, of environmental degradation. Governor Hughes presented this award to the Committee in May.

In anticipation of the 1980 Legislative Session, Trust workers and trustees prepared an extensive report on Maryland's litter problem and anti-litter programs, details of programs used in other states,

and recommendations for action by the General Assembly.

Maryland Environmental Trust has seven volunteer committees in Allegany, Baltimore, Howard, Montgomery, Somerset, Wicomico, and Worcester Counties and has affiliations with Citizens For A Better Charles County and the Potomac River Association. The Trust also works on mutual projects with other organizations, such as the Committee to Preserve Assateague Island, the Maryland Historical Trust, the Maryland Conservation Council, the Federated Garden Clubs of Maryland, the Potomac River Trails Council, and the Green Valley Group in Kent County. The projects concerned such matters as environmental education, community improvement, farmland preservation and local zoning cases.

CAPITAL PROGRAMS ADMINISTRATION

	Budget
General Funds	\$1,477,364
Special Funds	4,941,076
Federal Funds	231,193
TOTAL	\$6,649,633
Number of Staff	109

The Capital Programs Administration includes three programs Land Planning Services, Program Open Space, and Shore Erosion Control. Under the direction of the Assistant Secretary and three program directors, this administration provides planning services for state parks, natural resources management areas and recreational facilities; it administers funds of Program Open Space under provisions of the *Outdoor Recreation Land Loan of 1969*; provides Shore Erosion Control services to public and private landowners.

PROGRAM OPEN SPACE

The mission of Program Open Space is to provide public recreational and open space opportunities within the State of Maryland.

Program Open Space coordinates the purchase of Natural Resources lands, coordinates the design and development of Natural Resources facilities and maintains records of all Natural Resources lands and structures. Program Open Space also obtains federal grants to assist funding land acquisition and development, administer state and federal grants to Maryland's subdivisions for local recreation and open space, manages three Natural Resources Management Areas, and coordinates development and maintenance of the Helen Avalynne Tawes Garden.

Program Open Space is divided into four projects.

Acquisition and Development

ACQUISITION The Department of Natural Resources presently owns 302,718 acres of land, apportioned as follows:

State Parks	68,970
State Forests	120,216
Natural Environment Areas	11,087
Natural Resources Management Areas	13,759
Wildlife Management Areas	78,338
Fish Management Areas	900
Energy and Coastal Zone	1,045
Maryland Environmental Trust	8,254
Miscellaneous	149

Land ownership increased in FY 1979 by 10, 207 acres.

At present, under the Outdoor Recreation Land Loan, the Department is receiving approximately, \$12,000,000 a year for the acquisition of land.

DEVELOPMENT The agency is responsible for the design and construction of the capital projects for the Department. In fiscal year 1979, the Department started work on 22 projects with a construction cost of \$6,814,902. This is an increase over the last fiscal year by \$398,703. During fiscal year 1979, the Department also started design on 7 projects with a cost of \$78,330.

**FY 1979
Design in DNR Areas**

Assateague State Park (1)	\$ 8,895.00
Albert Powell Fish Hatchery (1)	5,650.00
Elk Neck State Forest (1)	4,260.00
Fort Frederick State Park (1)	19,775.00
Manning Hatchery (1)	8,000.00
Patapsco State Park (1)	12,500.00
St. Clements State Park (1)	19,250.00
TOTAL	\$ 78,330.00

**FY 1979
Construction in DNR Areas**

Cedarville State Park (2)	\$ 261,915.12
Dan's Mountain State Park (1)	904,000.00
Deep Creek State Park (2)	1,789,774.00
Elk Neck State Park (1)	161,606.64
Gambrill's State Park (1)	2,250.00
Gathland State Park (1)	24,117.00
Greenbrier State Park (1)	13,160.00
Greenridge State Forest (1)	6,176.00
Herrington Manor State Park (2)	199,883.00
Manning Hatchery (2)	606,982.00
Martinak State Park (2)	50,850.00
New Germany State Park/ Savage River State Park	585,165.35
Patapsco State Park (4)	1,371,206.30
Point Lookout State Park (2)	179,600.00
Rosaryville State Park (1)	51,169.10
Sandy Point State Park (1)	119,000.00
Seneca State Park (3)	31,231.35
Shad Landing State Park (1)	11,200.00
Smallwood State Park (1)	65,410.00
Smithville Wildlife Management Area (1)	297,555.00
Tawes Garden (2)	28,001.00
Tuckahoe State Park (1)	54,650.00
TOTAL (22)	\$6,814,901.86

Records and Leases

This project is responsible for the administration of leases for real property, acreage, miscellaneous properties for the Department of Natural Resources and for maintaining all records on all lands assigned to this Department. Revenue received from these facilities for fiscal year 1979 totals \$557,543 and is divided as follows:

Real Property (146 houses)	\$202,212
Tillable Acreage & Pasture (5,850 acs.)	347,465
46 Barns & 20 Miscellaneous Items	7,866
TOTAL	\$557,543

Contributing to this increase in revenue were new acquisitions that have increased the acreage and improvements available, and the reevaluation of rents for land and improvements which has continued. In the area of rights-of-way, easements, plus administration fees, receipts are \$60,870.51 per year divided as follows:

Right of Ways	\$55,495.67
Administrative Fees	5,116.53
Gas Royalties	258.31
TOTAL	\$60,870.15
TOTAL INCOME	\$618,414.00

Land Management

Under the land management program, Program Open Space manages four areas - Tawes Garden, Fair Hill, Wye Island, and Monocacy, totalling 9,411 acres. Fair Hill, Wye Island, and Monocacy are presently under interim management plans. Under these plans, the crop land and buildings are rented out while the entire area is being used for a wildlife habitat.

In cooperation with the Department of General Services, Program Open Space coordinates the planning, maintenance, and operation of the Helen AvayInne Tawes Garden, at the Tawes State Office Building Complex in Annapolis. In fiscal year 1979, the General Assembly approved \$37,000 for the Tawes Garden. From this money, contracts have been awarded for construction of a raised planter and its sprinkler system. The raised planter, when completed, will contain speciality areas for plants of taste, touch and smell. Other site improvements for this money include new benches, a garden cart, and some round, movable, redwood planters. At a special luncheon in March, the Crofton Village Garden Club donated \$1,000 to the Tawes Garden. This donation is being used to start the planting in the Plant Mural, an area featuring annuals, perennials, and shrubs for year round interest.

Grants Since 1966, the Department has administered Maryland's apportionment of Federal Land and Water Conservation Funds totaling \$44,429,207. In 1969, the Maryland General Assembly passed the Outdoor Recreation Land Loan of 1969, "Program Open Space". The Department has administered \$110,200,000 in local Program Open Space funds to Maryland's counties, cities, and towns. The Grants Staff of the Department's Program Open Space has also administered other smaller grants from the Federal Department of Housing and Urban Development, the Office of Economic Development Assistance and the Appalachian Regional Development Commission.

The Grants work objective is two-fold (1) to obtain federal grants to supplement state Natural Resources acquisition and development and (2) to administer state and federal grants to Maryland's twenty-three counties and 160 municipalities. Supporting work involves project approval review, and processing of applications; publishing manuals and informational brochures; assisting applicants with applications, processing reimbursements, and maintaining records.

One significant event created considerable con-

cern during FY 1979 at both the State and Local levels. For the first time in ten years, the General Assembly, adjourned without approving Program Open Space funds for FY 1980. Hopefully, the FY 1980 allocation will be approved by the next Session of the General Assembly in January 1980 so that the identified goals of the Program can be met.

The accompanying charts summarizes the accomplishments of the Grants programs during FY 1979. Seventeen more applications were received in fiscal year 1979 than in fiscal year 1978. Three more projects were approved in fiscal year 1979 than in fiscal year 1978. However, the remarkable comparison is that with a 61% increase over FY 1978 in the amount of funds to be obligated, the grants staff maintained the same high 91% obligation rate in FY 1979 as in FY 1978.

These trends demonstrate continual improvements in the overall administration of both State and Federal Grants. Four factors contribute to this success. (1) Improved federal procedures and cooperation governing the Land and Water Conservation Fund, (2) improved local interest in making projects successful, (3) closer coordination on the part of the Program Open Space Project Officers and the Program Open Space Federal Grants Specialist, and (4) excellent administration of reimbursement processing and the maintenance of financial records on approved projects.

Program Open Space project officers are responsible for all grant applications within assigned counties or regions. They are master coordinators who dovetail successful grant approvals with proposed State acquisition and construction. Eight project officers are continually becoming more skilled in grants administration.

The accompanying charts compare FY 1979 accomplishments with FY 1978 activities and they highlight the numbers and verities of projects that were approved during FY 1979.

LAND PLANNING SERVICES

This Section is responsible for the planning related to the acquisition and development of public lands administered by the Department of Natural Resources. It is also responsible for the implementation of the Wild and Scenic Rivers Act, Title 8, Natural Resources Article. It also performs environmental evaluation of all Department of Natural Resources capital projects in compliance with the Maryland Environmental Policy Act. Finally, it performs numerous coordinating functions that relate DNR Lands to county plans, transportation plans, disposal of surplus federal lands, designation of

critical areas under the Land-use Act, and administration of Wildlands Act.

The work of this Section is divided into four major activities, which are: park master planning; Scenic Rivers Program; acquisition mapping; environmental review projects. Approximately 60 percent of the time of the section is devoted to the production of State Park Master Plans. This involves extensive field study, design planning, public participation in planning (through advisory committees, public meetings and workshops), recreation demand assessment and coordination with other units of government. The products are plans that are broadly acceptable to the community, that are compatible with the environment, that provide useful and attractive parks of good design, and that make reasonable and efficient use of public monies for capital development. Twenty percent of staff time goes toward the preparation and revision of acquisition maps to guide acquisition of all DNR properties. The Scenic Rivers Program involves approximately 10 percent of staff time and environmental review 10 percent.

The planning process is evaluated by measuring staff time in relation to units of work produced. This is compared to the cost of similar services if contracted from a private planning and design firm. In general, the Section provides planning services and products at roughly 50 percent of the cost of a private supplier.

Park Master Planning

Susquehanna State Park

3 Advisory Committee meetings were held. The master plan was approved and adopted by the Secretary of Natural Resources in March, 1979; and the final master plan report was published in June.

Calvert Cliffs State Park

The final draft of the Revised Development Plan was completed and circulated for review. The Revised Development Plan should be approved and printed in the early part of fiscal 1980.

Gunpowder Falls State Park

17 Advisory Committee meetings were held and 4 field trips were conducted with the Committee. The Concept Plan was completed and presented at 3 public information meetings in February 1979. Three additional presentations of the Concept Plan were made to local groups. At the present time work is being accomplished on the draft master plan.

Fort Frederick State Park

Work on the Revised Development Plan was initiated in November, 1978. Research, background

studies, and site inspections have been conducted; and preliminary development proposals are being prepared for review. The Revised Development Plan should be completed by the middle of fiscal 1980.

Base Map Update

Preparation and updating of base maps for state parks was initiated in February, 1979. These maps will show current developed facilities and topographic features of many existing state parks; and will be used for future planning needs. Ten maps were completed in fiscal 1979; and an additional 10 maps will be completed in fiscal 1980.

Hart Miller Island State Park

Task Force meeting was held. A Technical Advisory Committee will assist in the preparation of a Preliminary Concept Plan for the diked disposal area.

Scenic and Wild River Program

Deer Creek

- A. Status: Plan completed May 1978
Revised plan completed August 1979
Local Harford County ordinance passed
- B. Future Work: Continue support of management plan

Severn River

- A. Status: Management recommendations in draft form.
Definitions of riverscape complete.
- B. Future Work: Write narrative and policy chapter.
Review, rewrite and publish.

Anacostia

- A. Status: A grant in the amount of \$15,000 to WSSC/MNCPPC has been approved.
These agencies will develop the Management plan.
- B. Future Work: Coordinate with WSCC and MNCPPC in developing the management plan. This should take 9-12 months.

Monocacy

- A. Status: University of Maryland, graduate recreation program is conducting two surveys; of recreation users and land owner on the values and use of the river.

Youghiogheny

- A. Status: Amendments to the Wild and Scenic River Regulations have been promulgated.
- B. Future Work: Continued management of the regulations. Advisory Board of determine future planning on the rivers.

Pocomoke

- A. Status: Begin work on management plan in conjunction with SCS Pocomoke River Special study.

General

Five local advisory boards have been functioning throughout the year. These boards have met from 6-12 times each during the past year.

Acquisition Mapping

Greenridge	51,477 acres	90% complete
South Mountain	9,000 acres	95% complete
Greenbrier	1,683 acres	90% complete
Patapsco	11,171 acres	65% complete
Pocomoke	1,420 acres	15% complete

Environmental Review Over 1126 referrals were made to Land Planning Services for review including coordination with DNR agencies, other state, federal or local government agencies or the public.

The following environmental assessments for Land and Water projects were prepared:

Gunpowder Falls State Park	Acquisition Program
Seneca State Park	Phase II Development
Patapsco Valley State Park	Park Office Development
Indian Spring Wildlife Mgt. Area	Service Complex Development
St. Mary's Fishing Lake Fish Mgt. Area	Picnic Area Development
Tuckahoe State Park	Lake Area Day Use Development
Greenbrier State Park	Nature Center/Concession State Development

For Rails-to-Trails Program application:

Northern Central Railroad	Acquisition & Development
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For the Historic Annapolis, Inc., Land and Water Project:

William Paca Conservation Center	Development
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In addition, on-going Land Planning Services review was provided for permit applications, SHA projects, and Anne Arundel County Zoning notices. Frequent assistance was given to the Project Review Officer.

A Proposal for a Maryland Natural Heritage Program was developed with an Interagency Task Force. This program has as its goal the identification and protection of representative examples of the State natural heritage including endangered species. It will utilize existing State programs to focus protection on selected sites and will make readily available information to aid in making wise decisions on the development of the State's resources.

SHORE EROSION CONTROL

The Shore Erosion Control program, staffed by twelve full-time employees, is responsible for providing financial and technical assistance to waterfront property owners with shore erosion problems on the Chesapeake Bay, its tributaries and the Atlantic coastal region.

Financial assistance through the Shore Erosion Control Construction Loan Fund is provided to qualified property owners for the construction of shore erosion control structures. Under this program interest free loans are provided for a period up to 25 years.

Technical assistance is available to property owners who do not qualify for financial assistance. Aid is rendered in the form of site inspections, technical and permit information, and recommendations on possible solutions and courses of action to resolve specific shore erosion problems.

In conjunction with design and construction tasks, program personnel obtain topographic and hydrographic data at proposed sites for use during the project design phase. During the construction phase an inspector visits the project site frequently to ensure that all work is performed as specified. In addition, program personnel also performs administrative functions in the management of design and construction contracts and have overall responsibility for the operation of Shore Erosion Control Revolving Loan fund.

**SUMMARY OF GRANT PROGRAMS
SINCE EACH PROGRAMS BEGINNING**

Grant Program	Number of Project Applications	Total Allocations	Amount of Allocation Obligated for Projects	Unencumbered Balance of Allocation	% of Allocation Obligated	Amount of Allocation Reimbursed
Local POS FY 69 - FY 79	1,341	\$110,200,000	\$102,009,336	\$ 8,190,664	74%	\$ 82,422,772
Federal LWCF FY 65 - FY 79	323	\$ 44,429,207	\$ 37,662,623	\$ 6,766,584*	85%	\$ 34,434,382
TOTALS	1,664	\$154,629,207	\$139,671,959	\$14,957,248	91%	\$116,857,154

*NOTE Six project pending Federal approval = \$6,840,408 in LWCF assistance.

**GRANTS STATUS
PROGRAM OPEN SPACE & LAND AND WATER CONSERVATION FUND**

Grant Program	Rec'd.	Acq. Projs. Rec'd.	Dev. Projs. Rec'd.	Acq. Projs. App.	No. Of Acres App.	Dev. Projects Approved	Total Funds Approved	Total Funds Reimbursed	Unencumbered Balance June 30
Local POS	FY 78 FY 79	31 37	80 84	46 41	1,637.8 960.1	108 110	\$ 8,780,061 \$13,816,023	\$12,110,952 \$ 9,379,462	\$ 9,321,025 \$ 8,190,663 (Does not include FY 79 & 80 Allocation)
Federal LWCF	FY 78 FY 79	4 7	9 13	4 7	1,225.0 1,894.0	8 11	\$ 5,595,786 \$ 5,045,171	\$ 3,876,643 \$ 4,833,382	\$ 3,973,276 \$ 6,766,584*
TOTALS	FY 78 FY 79	35 44	89 97	50 48	2,862.0 2,854.0	116 121	\$14,375,847 \$18,861,194	\$15,987,595 \$14,212,844	\$13,294,301 \$14,957,247

*NOTE Six projects are pending Federal approval in the amount of \$6,840,408 in LWCF assistance which will more than use unobligated balance.

**SHORE EROSION CONTROL PROJECT STATUS
AS OF JUNE 30, 1979**

No. of Projects	Project Status	Property Owners Served	SEC Loans	Other Funds*	Total Construction Cost
25	Completed	30	\$1,048,340.75	\$ 227,454.75	\$1,275,795.50
18	Under Construction	38	923,948.79	108,863.91	1,032,812.70
9	Under Contract	18	358,380.93	10,280.00	363,660.93
5	Contracts Pending	12	283,922.34	26,155.66	310,078.00
2	Scheduled for Bid	2	34,897.20**	7,200.00**	42,097.20**
33	Under Design	45	2,183,495.00**	832,495.00**	3,015,990.00**
92		145***	\$4,827,985.01	\$1,212,449.32	\$6,040,434.33**

* Special appropriations and property owner contributions

** Estimated costs

*** Includes projects for Talbot County, the Towns of Ocean City and Chesapeake Beach, the communities of Fairhaven and Bay City and three S.E.C. Districts serving numerous property owners.

ACCOMPLISHMENTS — FY 79

Technical Assistance Actions	184	
S.E.C. Loan Applications Processed	41	
Topographic/Hydrographic Surveys	8	
Engineering Contracts Issued	30	
Construction Projects Bid	32	
Construction Contracts Issued	41	
S.E.C. Loan Agreements Processed	48	
Buyer's Agreements & Releases Processed	17	
Length of Shoreline protected by:		
Timber Bulkheads	4141'	
Aluminum Bulkheads	755'	
Stone Revetments	3765'	
Timber Groins	+1800'	
Totals	10,461'	Or 1.98 miles
Number of Projects Completed	25	
Number of Property Owners Served	30	
Total Amount of		
S.E.C. Loans Granted	\$1,048,340.75	
Total Cost of		
Construction Completed	\$1,275,795.50	

ASSISTANT SECRETARY FOR ENVIRONMENTAL MATTERS

The Assistant Secretary for Environmental Matters represents the Department and the State on several organizations and in a number of environmental management activities at the state, regional, and national level. He serves as a member or officer of interstate commissions, regional councils, national associations, and technical work groups dealing with water resources and related environmental affairs. During F.Y. 1979, he served as chairman of the *Susquehanna River Basin Commission*, and continues as a member of that 100-year Federal/State Compact commission. Recent activities of the SRBC of particular interest to Maryland have focused on relicensing of the Conowingo Dam including issues of fish passage, water supply, flow releases, and debris management.

He is the Immediate Past Chairman of the *Southern Environmental Resources Conference*, which is an affiliate of the *Council of State Governments*. He is a member of the *Interstate Commission on the Potomac River Basin*, the *Potomac River Basin Advisory Committee* and the *Ohio River Basin Commission*. He is an executive officer of the *Interstate Conference on Water Problems*, and serves as the Governor's representative on the *Subcommittee on Water Management of the National Governors' Association*. He represents the Department of Natural Resources as a board member on the *Board of Certification of Superintendents for Water, Wastewater, and Industrial Wastewater Works*.

For a number of years, he has also served as a scientific advisor and member on national technical boards, such as EPA's Standing Work Group on Water Monitoring. That work group recently produced a guidance manual on "Basic Water Monitoring." A similar EPA manual on "Biomonitoring for NPDES Compliance," produced by another Task Force on which he serves, is in final draft form.

The Assistant Secretary also coordinates Department review of all projects assessed for environmental impact pursuant to the National Environmental Policy Act and U.S. Office of Management and Budget Circular A-95.

BOARD OF REVIEW

MEMBERSHIP OF THE BOARD

Changes in the membership of the Board during the fiscal year were as follows.

In April, 1978, Vice Chairman Harold E. Wibberley submitted his resignation as a member of the Board. Mr. Phillip S. Thompson was elected Vice Chairman. The vacancy on the Board created by Mr. Wibberley's resignation was filled on July 17, 1978 when Acting Governor Lee appointed Mr. Lem E. Kirk of Hancock to complete the remainder of Mr. Wibberley's term.

At the end of the late fiscal year, June 30, 1978, Chairman John W. Neumann, Mr. J. Neil McCardell, Sr. and Mr. Calman J. Zamoiski, Jr. completed their terms on the Board. Chairman Neumann and Mr. Zamoiski were reappointed by Acting Governor Lee for additional three year terms. Mr. McCardell was appointed to the Thoroughbred Racing Commission and on November 1, 1978, Acting Governor Lee appointed Mr. Stanley S. Fine of Baltimore to replace Mr. McCardell.

Following the reappointment of Chairman Neumann and Mr. Zamoiski and the appointment of Messes Kirk and Fine, the membership of the Board consisted of:

John W. Neumann, Chairman	1981
Phillip S. Thompson, Vice-Chairman	1979
Stanley S. Fine	1981
Lem E. Kirk	1980
Edward H. Higgins	1980
W. Dorsey Hines	1979
Calman J. Zamoiski, Jr.	1981

The terms of Mr. Thompson and Mr. Hines expired on June 30, 1979. Governor Hughes reappointed Mr. Thompson for an additional three year term and Mr. William H. Corkran, Jr. of Easton was appointed to replace Mr. Hines.

The Board conducted seven meetings during fiscal year 1979 on the dates indicated. A summary of the business transacted at each meeting is also shown.

September 27, 1978: Ninety-Second Meeting, Calvert County Courthouse, Prince Frederick. Regular business and the Hearing of Contested Case C78-4, Powers vs Water Resources Administration. The Board also visited the site of the appellants property on Broomes Island" to review the land in question".

November 9, 1978: Ninety-Third Meeting, Tawes State Office Building, Annapolis. Regular business. The Board also held a public hearing on the proposed regulations of the Board, Agency Rule 08.16.01, as published in the Maryland Register. There were no appearances and the draft regulations were adopted with an effective date of January 1, 1980. A draft Opinion and Order for Contested Case C78-4, Powers vs Water Resources Administration was reviewed, approved and adopted. The Secretary to the Board was requested to prepare a final Opinion and Order for execution by the Chairman at the next meeting.

December 7, 1978: Ninety-Fourth Meeting, Harrah Farm, Oxford. The Opinion and Order for Contested Case C78-4, Powers vs Water Resources Administration, received final review by the Board and was signed by the Chairman.

March 5, 1979: Ninety-Fifth Meeting, Old Armory Building, Annapolis. The Board heard Contested Case C79-1, Vera L. Reiner et al vs Department of Natural Resources.

April 30, 1979: Ninety-Sixth Meeting, Tawes State Office Building, Annapolis. The Board discussed Contested Case C79-1 and reviewed a draft Opinion and Order for the case. The Secretary was requested to prepare a revised draft of the Opinion and Order for further consideration by the Board at the next meeting.

June 3, 1979: Ninety-Seventh Meeting, Ocean City and vicinity. In preparation for anticipated appeals, the Board inspected wetlands in Assawoman and Sinepuxent Bays and on the Isle of Wight.

June 4, 1979: Ninety-Eight Meeting, Stardust Motel, Ocean City. The Opinion and Order for the Contested Case C79-1, Reiner et al vs the Water Resources Administration was reviewed, approved and adopted by the Board and executed by the Chairman. The appeal filed by Ronald B. Wishard was reviewed and the Board set the case for hearing on July 16, 1979.

During Fiscal Year 1979, the Board conducted hearings on two Contested Cases and rendered Opinions and Orders in these cases. A resume of these cases follows:

a. Contested Case C78-4, Thord L. Powers vs the Water Resources Administration.

The Board heard the case at the ninety-second meeting of the Board on September 27, 1978. The Opinion and Order for the case was reviewed by the Board at the ninety-third meeting on November 9, 1978. The Opinion and Order was approved, adopted and signed by the Chairman at the ninety-fourth meeting on December 7, 1978.

This case involves an appeal of an action by the Water Resources Administration wherein Powers was denied a permit to construct a four-foot high timber bulkhead in private wetlands and to fill behind the bulkhead with land source borrow. The Board upheld the Water Resources Administration in the denial of the permit.

Powers appealed the decision of the Board to the Circuit Court for Calvert County. On August 15, 1979, Judge Perry G. Bowen, Jr., affirmed the Opinion and Order of the Board.

b. Contested Case C79-1, Vera L. Reiner et al vs the Department of Natural Resources.

After numerous delays and postponements, the case came on for hearing at the ninety-fifth meeting of the Board on March 5, 1979. The Board reviewed and revised a draft Opinion and Order for the case at the ninety-sixth meeting on April 30, 1979 and the Opinion and Order was approved, adopted and signed by the Chairman at the ninety-eighth meeting of the Board on June 4, 1979.

This case involved an appeal by Vera L. Reiner, Joan Novak, Elmer S. Baranowski, The Oliver Beach Improvement Association, The Inland Waterway Improvement Association, and The Maryland Conservation Council of an action by the Water Resources Administration wherein a waterway construction permit to change the cross section of Big Gunpowder Falls was issued to the Flintkote Company.

The permittee, the Flintkote Company, and the Department of State Planning were parties to the case. On the date of the hearing, The Maryland Conservation Council withdrew as a party.

In an eighteen page Opinion and Order, the Board of Review affirmed the action of the Water Resources Administration in the issuance of the permit.

The appellants before the Board of Review appealed the decision of the Board to the Circuit Court for Baltimore County. The case was argued before Judge Marvin J. Land on September 19, 1979 and the decision of the Court is pending.

MARYLAND ENVIRONMENTAL SERVICE

GENERAL DIRECTION

MES is one of the few agencies of its kind in the nation, a State Agency and a public utility corporation operated on a non-profit basis. Consequently, the MES total budget is the sum of several parts.

A summary of revenues by source is below:

General Funds	
General Operations	\$ 520,617.00
State Sewer & Water Projects	1,332,971.00
TOTAL	\$1,853,588.00
Special Funds	
State Projects	\$ 156,866.00
General Operations	349,527.00
TOTAL	\$ 506,393.00
TOTAL	\$2,359,981.00
Total Corporate Operations	\$10,107,084.00
GRAND TOTAL	\$12,467,065.00

The Maryland Environmental Service provides a full range of planning, design, finance, construction, and operations of water supply, waste water treatment and solid waste management systems, on a wholesale basis to municipal and county governments and private businesses.

WATER AND WASTEWATER

As the operators of more than 100 projects for water supply, liquid and solid waste treatments and disposal facilities throughout the state, MES has an

annual operating budget in excess of \$12 million.

Nearly 200 persons are employed directly by the Service and another 75 are employed by facility operations contractors engaged by MES.

State budget general funds are used to carry out planning and technical assistance programs to the State and its local jurisdictions and to operate State-owned water and wastewater treatment plants. (MES is responsible, by executive order for the operation of water and wastewater facilities in State institutions). However, the Maryland Environmental Service's principal area of growth has been in the supplying of services to local governments and private entities. Utility operations and technical services performed for these clients are paid for in full by the users.

A staff of 90 operators, maintenance and support personnel now provides 24 hour operations and maintenance services, including collection and analysis of samples and preparation and filing of applications, permits and reports.

During 1979, the Maryland Environmental Service supplied water and waste water supervision and management services to nearly 100 facilities in the State of Maryland.

RESOURCE RECOVERY

In the nine years since the Maryland Environmental Service was established, a significant change has occurred in public and professional attitudes toward the management of municipal solid wastes.

Early emphasis on the collection of beer cans from roadways and the separation of newspapers for recycling has been augmented by a new, more sophisticated technology geared to the reuse of municipal refuse as a source of fuel.

MES is one of the leaders of the resource recovery and energy conversion movement in the United States.

The principal resource and energy conversion projects in which the Maryland Environmental Service has financial, managerial or contractual interest are the Baltimore County Resource Recovery Facility; the Beltsville Sludge Composting Project; the Seerdum Refuse Pulverizer in Wicomico County and the Baltimore City Pyrolysis plant.

In the Baltimore County Resource Recovery Facility now on line at Texas, Maryland, organic material from Municipal Solid Waste is being converted to *refuse derived fuel* (RDF). This fuel has about 50 percent of the energy value of coal (BTU's) and can be burned simultaneously with coal or in dedicated

boilers burning only RDF. A pellet product (Densified-RDF) and RDF fluff have both been test burned extensively in the past two years.

Installations including schools, a correctional institution, a cement kiln and a paper mill have cooperated with Baltimore County, MES, and Teledyne National (the contractor) to conduct test burns of these two products. Reports from test burns have been favorable.

A contract was signed this year with Wright Patterson Air Force Base in Dayton, Ohio, to provide 20,000 tons of D-RDF over a three-year period. It is anticipated that this contract will be the forerunner of similar sales as the country turns to alternative fuel sources in the years ahead.

Planning is proceeding for an electrical generating plant which would handle 1600 tons per day of municipal solid wastes to be built in eastern Baltimore County. A similar RDF fired steam and electrical generating plant is being discussed with officials of the Army and Harford County.

SLUDGE AND COMPOSTING

Composting of sewage sludge started as an MES-sponsored experiment at the U.S.D.A. Beltsville ARS in 1979.

In the years between 1973 and 1979, U.S.D.A. and MES scientists and technicians have succeeded in developing a soil conditioner which is useful for the production of agricultural and ornamental crops, roadside landscaping and lawn care.

Currently, about 50 tons of sludge per day is being composted. Compost from Beltsville is used in numerous gardening and landscaping activities in the region, including the Helen Avalynne Tawes Garden at the Department of Natural Resources in Annapolis.

BIOMASS CROP PRODUCTION

Presently, experiments to improve composting techniques continue at Beltsville. Plans include studies of compost for use in production of biomass crops.

MES anticipates that by the end of FY '80 a biomass crop (corn), will be grown on one or more sludge trenching sites. Compost produced at the DC Facility will be used for a demonstration of restoration of a completed trench site. The demonstration of the use of compost for biomass cropping on this large a scale has not been done before. The corn crop will be suitable for sale as fuel alcohol (ethanol) feedstock. The residue can then be used as a bulking agent in future composting, instead of woodchips.

While the jurisdictions using the Blue Plains Treatment Plant on the Potomac River seek satisfactory sites for full-scale composting operations, trenching of approximately 600 tons per day of sludge is being carried out by MES on an interim basis for Montgomery and Prince George's Counties.

OIL

The Maryland Environmental Service has been involved with efforts to encourage collection, reprocessing and resale of the oil drained from automobiles by the thousands of do-it-yourself auto mechanics in Maryland.

Currently, MES is coordinating the efforts of nearly 700 individual collection centers (gas stations, auto dealers and others) by providing information and guidance to individuals and groups; and by using persuasion and education to prevent the loss of this valuable resource. MES works in close cooperation with the Water Resources Administration in this project, with WRA being responsible for enforcing the "no-dumping" provisions of the Used Oil Recycling Law passed by the 1978 Legislature. In cooperation with Department of Transportation, Motor Vehicle Administration, 100,000 leaflets have been produced and will be distributed with license applications and renewals, in FY '80.

TIRES

Used auto and truck tires are an eyesore, visually polluting streams and fields. Their flexibility causes them to "float" to the surface when landfilled. Shredding, burning and other methods of disposal have not been satisfactory and efforts continue to find suitable means of disposal.

One alternative has been the use of these tires for the construction of fishing reefs offshore near Ocean City. The tires provide habitat for game fish which in turn attract sports anglers to the area.

This project is being carried out by the Town of Ocean City, with assistance from the Fisheries Administration and the Capital Programs Administration and the Maryland Environmental Service. Half a million tires were baled and emplaced in FY '79.

HAZARDOUS SUBSTANCES

MES is presently involved in the search for improved means of managing toxic wastes. The Service has accepted responsibility for cleaning up a serious problem involving chrome ore wastes and in FY '80 will be involved in efforts to manage and monitor other hazardous substances.

MARYLAND FOREST SERVICE

	Budget
General Funds	\$1,929,232
Special Funds	775,305
Federal Funds	749,945
TOTAL	\$3,454,482
Number of Staff	170

The mission of the Maryland Forest Service is the management of forest and trees and the promotion of their values for the benefit of people.

The system by which the Forest Service seeks to carry out its mission is divided into three main units of activity — State Forest Operations, Resource Protection, and Technical Forestry and Reforestation.

STATE FOREST OPERATIONS

This unit of activity is concerned with acquisition, timber sales, reforestation, maintenance, and the daily operation of the Forest Service.

Ten forested areas totaling 125,115 acres, make up the state forest system. These areas include: *Doncaster State Forest* - 1,485 acres; *Elk Neck State Forest* - 2,996 acres; *Garrett State Forest* - 6,824 acres; *Green Ridge State Forest* - 32,466 acres; *Pocomoke State Forest* - 13,229 acres; *Potomac State Forest* - 10,658 acres; *Savage River State Forest* - 53,064 acres; *Seth State Forest* - 125 acres; *Wicomico State Forest* - 1,110 acres; and the *Cedarville Natural Resources Management Area* - 3,158 acres.

Land Acquisition During 1979, the state forests were enlarged by the acquisition of 3,507 acres, including 1,836 acres for Green Ridge, 1,429 acres for Pocomoke and 241 acres for Savage River State Forest. The Green Ridge acreage will provide additional valuable frontage on the scenic Paw Paw Bends section of the Potomac River, dear to float trippers and canoeists. The Pocomoke addition was obtained through the Nature Conservancy and will help to protect and preserve the designated Scenic Pocomoke River.

Federal Manpower Program on State Forests Enrollees of the federally funded Youth Conservation Corps and Comprehensive Education and Training Act programs again took part in state forest projects during 1979.

The Y.C.C. program involves high school students interested in resource conservation. Student enrollees engaged in a work learning experience on several state forests during the summer of 1978 as follows:

Green Ridge State Forest	16 enrollees
Elk Neck State Forest	8 enrollees
Pocomoke State Forest	5 enrollees

The Y.C.C. boys and girls completed valuable forest projects in their home counties. Examples of their projects include a mile hiking trail, surveying new forest boundaries and constructing a nature trail.

The C.E.T.A. program is more labor-intensive than Y.C.C. and enrollees perform duties similar to regular state forest employees. An example of their work is the recent improvement of the Savage Bridge and White Water Canoe camping areas on Savage River State Forest. These camping areas accommodate canoeists attending the biennial white water canoeing events on Savage River.

Timber Sales Timber prices were higher in 1979, so that even with fewer timber acres sold, forest income was up significantly. Fire wood sales increased in 1979. Citizens are enjoying themselves while cutting their own firewood at a reasonable price; at the same time much low grade timber material is salvaged from the state forests and put to good use.

Timber Stand Improvement The improvement of the state forests by thinning and removing defective diseased trees is a high priority project. Although the total number of acres improved in 1979 was down slightly, the removal of firewood by citizens improved many acres and more than offset the decline.

Reforestation The number of acres of trees planted on state forests declined very slightly to 314 acres. It is anticipated that this will rise sharply next year as newly-acquired open areas and timbered areas not planted in 1978 are reforested.

Forest Visitation Forest visitation decreased about 15 percent in 1979. Weather was thought to be the main reason. It is also believed that the camping "boom" is slowing down.

A new state forest camping policy was in effect in 1979. The new procedures are aimed at providing a quality camping experience for state forest visitors while protecting the forests from camping over-use and environmental damage.

TECHNICAL FORESTRY AND REFORESTATION

Several major elements of the TFR Program combine to improve and maintain the contributions that trees, forests and related resources provide to all citizens. All these efforts are service oriented in nature and are provided upon request to private landowners across the state. Some of the accomplishments are:

Private Woodland Owner Assistance Twenty-two project foresters and eleven foresters' aides, assisted 8,852 woodland owners. Detailed forest resource management plans were developed for 23,359 acres of privately owned land. Nine-hundred tree planting plans were prepared and 2,500 acres were planted or seeded to trees. Eighteen hundred and sixty-five acres were marked for harvest resulting in 7,848,000 board feet of timber being put up for sale.

Watershed Program Technical assistance was provided to landowners within five designated P.L. 566 small watershed projects and the Potomac Flood Control Project under P.L. 534. Both of these laws, provide forest resource management assistance and watershed protection. Forest management plans were prepared for 1,950 acres of forest land and 350 acres were planted.

Direct assistance was provided to the Water Resources Administration's 208 water quality management planning effort. Background and program elements addressing silvicultural nonpoint pollution were provided as well as the development of best management practices for forest harvest operation. Similar assistance was provided to the Baltimore Regional Planning Council's 208 planning efforts.

Forest Conservancy District Boards Forest Conservancy District Boards seek to encourage and assist in the wise use of trees for a multiple variety of benefits. Each county has a board made up of at least five persons from various walks of life. A president and executive committee coordinate state level activities, while each county has a chairperson to coordinate county activities. The project forester in each county is the secretary to the board and is responsible for board administration.

Nursery The Buckingham Forest Tree Nursery produces the seedlings for the forestation program and those for the Wildlife Administration; 127,000 hardwood, 2,336,148 softwood, 105,755 wildlife shrubs and 2,700 roadside trees were produced.

The physical plant and equipment have been upgraded by completion of an office to better serve the public and by increased mechanization in the growing, grading and handling of plant materials. Old and inefficient irrigation pipes are being replaced over a three-year period. Much of this work is timely, considering the anticipated increased production required to meet the needs of the Pine Tree Reforestation Law.

Urban and Community Forestry The Southern Maryland Rural Conservation and Development Project continued with the support of an urban forester in the Tri-County Southern Maryland area. Approximately 200 individuals, developers, planning agencies and local groups were assisted in such activities as the establishment, protection, retention and care of trees in urbanizing areas.

Federal cost-sharing became available in this year, and the MFS has employed a person to develop and administer a federally-funded Urban and Community Forestry Program.

The principle responsibility of this program is the protection of all trees growing within the right-of-way of any public road within the state. Forest Service personnel inspect the tree trimming and underground operations of all utility companies. Program personnel also work with county and state road departments and public-owned and controlled utilities to maintain an acceptable appearance along the roads when roadside tree trimming is required. Program activities also include the consultation with municipalities, improvement associations, developers, planners and private home owners on tree care and maintenance. The program is also responsible for the licensing of commercial tree experts. The program is basically self-supporting through the collection of permit fees and charges to utility companies for supervision expenses.

	Actual
Units of Measurement	1979
Permits Issued	2,620
Landowners Advised	2,406
Tree Expert Licenses Issued	269

FOREST PRODUCTS UTILIZATION

The FPU specialists continued to take a team approach to increased utilization of our forest resources by working for improvements in

harvesting, sawmilling, processing and machining, drying, wood energy, wood residue utilization, marketing and general forest products utilization.

The type of service varied greatly with 935 assists to individuals, mills and organizations involving 3,099,800 cubic feet and 215,000 board feet of forest products worth \$425,253.

Sawmill Improvement Program (SIP)	18 studies
Improved Harvesting Program (IHP)	
Logged Area Analysis	4 studies
Felling and Bucking	13 studies
Improved Drying Program	75 studies
Forest Products Residue Utilization	5 studies
Wood Energy	1 study
	7 programs

Forest Resource Planning Recent federal legislation provided funding through the USDA Forest Service for state comprehensive forest resource planning. As a result, a forest resource planner has been employed to develop the framework for a comprehensive forest resource assessment and program planning effort in Maryland. The multi-year, dynamic planning process will enable the MFS to assess current and projected supply and demand situations for a broad spectrum of forest resources and to formulate alternative programs that will provide the agency with future resource policy direction. A public involvement plan was developed to allow the citizens of Maryland to participate in the planning process. A critical part of the pre-planning effort was development of the Maryland Forest Resource Planning Act which will be submitted to the General Assembly. Passage of the Act will formalize the planning process by making it a continuing part of the MFS's responsibilities and by linking it to the annual budgeting process.

FOREST RESOURCE PROTECTION

This program has the responsibility of providing protection from wildfire and assistance in Insect and Disease Control. Wildfire protection is provided to 2,706,000 forested acres and 994,000 acres of not forested watershed. The resource value of the area protected is 1,647,712,074 dollars. Values are based upon 1972 dollars.

Fire Protection Wildfire poses a major threat to the forest resources of Maryland. In fiscal year 1979, Maryland Forest Service personnel extinguished 604 fires burning 3229 acres. Although the number of fires were fewer than the previous five years average (775), the acreage burned exceeded this average by 1000 acres. The large acreage is due to the difficulty

in extinguishing Maryland fires on the Eastern Shore. Even with improved equipment, marsh fires contain to present a major suppression problem due to large inaccessible areas. This problem will be addressed through the use of aerial attack with aircraft supplied by the Maryland State Police.

The leading causes of fires are incendiary (142), debris (144), children (110). Efforts to reduce fires by these causes include.

- (a) School programs to educate the student as to the value of the forest and the danger of fire.
- (b) Distribution of "Smokey Bear" materials to both children and adult groups (118,000 items).
- (c) Junior Forest Rangers where 2500 children received ranger kits.
- (d) Increased inspection of sites and enforcement of burning permit requirement to reduce debris fires.
- (e) Increased training to improve investigative techniques, in order to apprehend and convict incendarists.

In addition to fire suppression and prevention efforts, other activities in fire protection included: conducting training programs to fire departments, hosting the Middle Atlantic Forest Fire Compact training session and the planning and conducting prescribed fires for site preparation for reforestation.

Through the Rural Community Fire Protection program, the Forest Service provided \$37,600 to rural fire departments. These funds were used to provide training and purchase suppression equipment.

Insect and Disease Forest Service personnel are involved in insect and disease detection. A major effort is directed towards the reduction and limitation of the Gypsy Moth infestation in Maryland. In cooperation with the Maryland Department of Agriculture. Forest Service personnel assist in the survey and trapping program. Over 600 hours were expended in 1979 to survey 180,000 acres. Personnel also provide surveys and evaluation of other major pests such as the Southern Pine Bark Beetle in the Eastern Shore and the Oak Wilt Disease in Western Maryland.

Roadside Tree Protection The Forest Service has the responsibility for the protection of trees growing within the rights-of-way of public roads. Protection is provided through a permit system and inspection of work being carried out in the right-of-way. In 1979 over 1500 permits were issued for treatment of roadside trees. Over 25,000 hours were spent in the super-

vision of utility construction and maintenance projects involving roadside trees. The cost of this supervision is funded through charges for work supervision.

The Forest Service also provided 2,662 shade trees at cost to both individuals and communities for roadside beautification.

In meeting the requirement of the Tree Expert licensing law, 272 persons and companies were issued licenses in fiscal 1979. Revenue from this activity was \$2,144.

COOPERATIVE FOREST MANAGEMENT

This program is responsible for rendering advice and assistance to landowners for multiple forest resource management and development of their woodlands. This service is available to individuals, municipalities and developers, and involves timber marking, timber stand improvement, watershed and wildlife development, area design for sub-divisions and overall environmental aesthetics, assistance with environmental education projects, advice and assistance to the wood-using industry involving utilization marketing, revegetation of strip mines, and reforestation throughout the state. The program is concerned with the establishment of trees in the environment and to this end operates and maintains the Buckingham Forest Tree Nursery, which produces approximately 3,100,000 seedlings, plus 3,000

to 5,000 roadside trees, annually for distribution throughout the state. The program works closely with the county Forest Conservancy District Boards in promoting and developing sound forestry practices.

Federal funds supporting a portion of program costs (under the Cooperative Forest Assistance Act of 1978) are obtained from the United States Forest Service on a matching basis depending on federal allotments. Some funds are also available under Title IV of the Agricultural Act of 1954, as amended, for reforestation and superior seed tree and seed protection development.

	Actual 1979
Forest Nursery	
Trees Distributed	2,767,015
Landowner Plantings (No.)	1,043
Acres Planted	2,527
Landowner Assistance	
Requests Serviced (No.)	8,852
Plans Prepared (Acres)	23,359
Forest Tax Relief Agreements (No.)	44
Timber Stand Improvement (Acres)	1,461
Watershed Improvement	
Critical Area Planted (Acres)	88
Forest Products Utilization Activities	801

RECREATIONAL USE OF STATE FORESTS

Fiscal Year 1979

STATE FORESTS

Activity	Pocomoke*	Doncaster	Cedarville N.R.M.A.	Elk Neck	Green Ridge	Savage River***	Potomac-Garrett**
Sightseers	21,000	525		4,200	2,317	11,880	27,232
Picnickers		147		1,055	675	115	2,170
Skiers							
Hunters	5,240	1,069		1,680	1,801	260	385
Fishermen					5,154	3,710	1,383
Campers				1,012	3,427	1,965	1,745
Nature Walking	300	74		250			
Hikers		63		1,210	161	213	
Snowmobiles						2,135	1,308
Horseback Riding	50	320		411	144		
Birdwatchers	250	35		50			
Shooting Range				9,364			
Ice Skaters				125			
Miscellaneous		145		2,500	1,251	1,975	1,281
TOTALS	26,840	2,378	29,004	21,857	14,930	22,253	35,504

* Include all visitors to Pocomoke River State Park (both areas).

** Include all visitors to Herrington Manor, Swallow Falls State Parks.

*** Include all visitors to New Germany, Big Run State Parks.

MARYLAND PARK SERVICE

Budget

General Funds	\$4,357,697
Special Funds	1,799,357
Federal Funds	— —
TOTAL	\$6,157,054
Number of Staff	254
Seasonal Staff	500

Of the nearly 80,000 acres of public land managed by the Maryland Park Service, 70,000 acres remain in their natural state. The remaining 10,000 acres are improved for public recreational enjoyment. Park improvements include roads, parking lots, buildings, utilities, and those facilities which people associate with state parks, namely, campgrounds, picnic areas, playgrounds, trails and water related facilities. There are 92 miles of paved roads and paved parking lots for 10,000 cars in the parks. Public buildings include comfort stations, bath houses, concessions, pavilions, nature centers, museums, offices, maintenance buildings, storage buildings, contact stations and visitors centers.

Structures on public lands are rented by Maryland Park Service to tenants who reside there. Efforts have been made to standardize property rentals throughout the state in order to realize an equitable rent from each property. Rental income is earmarked for maintenance to these residences based on health and safety considerations as a first priority. Repairs to sewage systems, electrical systems and boilers are included in maintenance procedures. An annual inspection of all residences is now conducted.

Facilities which provide the general public with a variety of activities are heavily used and in constant demand. The Park Service has 2,334 individual camping sites and a smaller number of sites for organized groups. There are 110 picnic areas and 73

playgrounds. Nature trails and hiking trails extend for 322 miles. Twenty ponds and lakes cover 728 acres. In addition, visitors enjoy the waters of the Atlantic Ocean, the Chesapeake Bay and selected rivers and streams. Boat launching ramps, boat docking slips and rental boats are available at many of the parks.

FEDERAL PROGRAMS

To assist with the maintenance of the parks' natural resources the Park Service has used the services available through the Youth Conservation Corp (YCC). In an eight week program from June to August 1978, the 66 YCC enrollees and 6 foremen worked at Pocomoke River, Patapsco Valley, Elk Neck, Cedarville Natural Resources Management Area and South Mountain Natural Environmental Area. They accomplished many projects related to environmental protection such as erosion control, renovation of nature trails and campsites, grounds and building maintenance and the construction of fire rings, grills and picnic tables. The Park Service will use the services provided by the Young Adult Conservation Corp (YACC), another federal program in FY 1980.

TRAINING

The Park Service has 254 full-time employees and approximately 500 seasonal employees who are hired mainly for the busy summer season. Park employees receive training to assist them in performing their duties in a competent manner.

Interpreter Training The fourteen rangers who regularly conduct interpretive programs participated in a week-long training program in February. As part of an ongoing program to provide these interpreters with a better understanding of natural features and processes, this program emphasized many technical aspects of natural resource study and interpretive program development. In addition to this program for classified personnel, a weekend training program was provided for summer interpreters to provide an orientation to the MPS interpretive program and to detail the duties and responsibilities of summer interpretive personnel.

The ranger-interpreter training program will be continued this fall with an emphasis upon using natural resource knowledge in the development of walks, talks, displays and other forms of interpretation.

Ranger School Ranger School, a training program for park personnel who handle park operations, public relations, and law enforcement, has been held annually since 1965. In the fall of 1978, it was held at the Maryland State Police Academy in Pikesville. Thirteen rangers participated in a four week program of basic ranger training and in the thirteen week program of law enforcement. Park Service personnel instructed the rangers on Park Service matters for the four week program. The rangers graduated from the Police Academy as commissioned law enforcement officers empowered to enforce the regulations of the Department of Natural Resources and all state laws including the Transportation Article and Article 27 of the Criminal Code on properties owned and operated by the Maryland Park Service.

Refresher Courses Annually, the Maryland Park Service provides refresher courses in law enforcement, first aid and CPR. These courses allow employees to improve their law enforcement skills every two years, their first aid every three years, and their CPR every year.

Technical Training Training for park employees who specialize in land and property management was increased in 1979. Several one-day training workshops were conducted in the Spring of 1979. The Park Service was able to take advantage of many workshops sponsored by outside agencies such as the University of Maryland, the Maryland Department of Health, the Maryland Department of Agriculture and the Maryland Recreation and Parks Association. In addition, two workshops were provided by Maryland Park Service personnel. Areas of training included workshops on pesticides, facilities construction, wastewater treatment, turf management, horticulture and electricity.

PROGRAMMING

Nature and history interpretation are the elements used by the Park Service to give park visitors an increased sense of awareness and respect for their environment. The Park Service's interpretive program was begun in 1968 when a prospectus was written

which proposed the implementation of an effective, long range interpretive program in the state parks. The goal of this program was to provide the public with a more meaningful and enjoyable park experience by developing a better public understanding of the rich natural and cultural heritage represented by various parks across the state.

The tenth anniversary of the original interpretive prospectus, 1978, was a landmark year for the Maryland Park Service Interpretive Program. Through close interaction with the Capital Programs Administration, seven major interpretive center facilities are well on their way toward development.

Nature Interpretation In spite of lower park visitation caused by the gasoline crunch in June, the attendance at interpretive programs remained fairly stable. The proportion of total attendance participating in interpretive programs actually increased in many parks. Interpretive programs and facilities continue to serve over 200,000 people. Roughly one-fourth of the total number of people visiting our parks participate in interpretive programs and activities.

Interpretive programs now extend into the fall, spring and winter. New programs have been developed to reach into the communities near our parks. The types of programs being provided are being gradually expanded toward a full spectrum of programs that will range from enjoyable activities to in-depth nature study.

Historical Interpretation While nearly all the parks have nature interpretive programs, historical interpretive programs are limited to the five state parks with features of historical interest. In the summer of 1979 the following programs took place at these parks:

At Fort Frederick, one full-time ranger interpreter and five summer seasonal historians garrisoned the fort seven days a week demonstrating a number of aspects of 18th Century frontier garrison life. In addition, a group of volunteers in the parks (VIP's) served at the fort on many weekends. Major weekend programs involving large military units were held in May (Fort Frederick Rendezvous), in July and September (Governor's Firelock Match).

A major new development occurred at Susquehanna State Park in 1979. The Steppingstone Museum Foundation, a private, non-profit organization, moved its 12,000 artifact collection to the park and, in cooperation with park authorities established an outdoor agricultural history museum with living history demonstrations. Elsewhere in the park, the Rock Run mill area, with several restored structures, were open to the public with living history demonstrations.

At Gathland State Park, a historical driving tour of the South Mountain Battlefield was unveiled and enthusiastically received by the public. In addition, in cooperation with Antietam National Battlefield, a two-day special event involving reactivated Civil War units was held to commemorate the two battles.

At Smallwood State Park, two seasonal historians provided tours of the restored manor house, colonial candlemaking demonstrations, gardening and cooking in the kitchen area. At the annual Revolutionary War Days weekend in May, numerous crafts-people from all over the east coast demonstrated their skills.

Point Lookout State Park's award-winning interpretive program was expanded and improved. Two interpreters dressed as Union and Confederate soldiers roamed through the park demonstrating various aspects of life in a Civil War prison camp. They also attended community events outside the park. A memorial service was held in June in honor of the prisoners who died at the Point.

Attendance at historical interpretive programs during the 1979 summer season reflected the interest shown by the public in these events:

Fort Frederick	71,000
Susquehanna	10,000
Gathland	8,525
Smallwood	39,011
Point Lookout	17,277

Special Events In addition to interpretive programming, many of the parks sponsored special event days which allowed visitors to participate in an unusual activity which is not held regularly at the park. These events establish a rapport between the park and the community, and frequently the community is a co-sponsor of the event. Some of the events attract visitors statewide as well as tourists passing through.

Several events are held annually. Those which were popular in FY 1979 are:

Special Events	Park	Attendance
Cross Country Ski Race	New Germany	1,060
Maple Syrup Demonstration	Cunningham Falls	4,750
Easter Egg Hunts	Elk Neck	400
	Cedarville	350
	Sandy Point	350
Martinak Days	Martinak	5,000
Smallwood Revolutionary War Days	Smallwood	6,734
Mid-Atlantic Championship Bathtub Races	Point Lookout	200

Programming in the parks is frequently enhanced by the volunteers who perform services without pay but are recognized by the Park Service as Volunteers in the Park (VIP). During FY 1979, VIP's performed a variety of duties including interpretive programs, craft programs, and nature trail restoration.

VISITOR PROTECTION AND ASSISTANCE

Because the Maryland Park Service is concerned with the safety and health of the public and its employees, it initiated a comprehensive safety program in all the state parks. The goals of the program established safety attitudes and safety habits. The safety program emphasized training all employees in accident prevention; keeping and updating accurate records and reports; investigation and safety inspections and establishing safety standards.

To insure that park visitors have a safe and troublefree experience in the parks, the Park Service has trained law enforcement officers and park wardens. These people, who usually serve as park rangers, primarily work as visitor contact personnel, making the park visit a worthwhile experience. They also enforce laws protecting and preserving the parks.

In FY 1979, park personnel responded to:

1,072 incidents, of which 712 were for assistance. 172 cases of larceny; 197 cases of vandalism; 1,832 citations; 3,658 warnings; and 1,633 first aid reports.

PARK ATTENDANCE 1975 — 1979

STATE PARKS	1975	1976	1977	1978	1979
Assateague	719,557	1,257,959	751,936	614,285	509,273
Big Run	24,390	20,278	24,242	15,905	16,971
Calvert Cliffs	31,051	34,362	30,897	45,849	44,501
Casselman River	8,880	10,809	3,701	2,026	787
Cedarville	45,552	54,915	29,014	43,294	50,199
Cunningham Falls	201,331	224,566	176,630	228,427	307,267
Dans Mountain	16,209	20,616	21,641	13,562	10,007
Deep Creek Lake	75,184	75,473	62,563	74,871	63,672
Elk Neck	313,145	373,493	240,593	99,618	236,615
Fort Frederick	94,130	125,718	94,787	5,148	68,501
Fort Tonoloway	10,127	7,113	7,420	144,110	4,997
Gambrill	93,573	83,656	113,514	50,749	172,016
Gathland	66,108	71,189	54,976	189,695	45,015
Greenbrier	179,179	217,845	214,787	657,412	172,389
Gunpowder Falls	359,781	613,101	560,960	101,023	587,509
Herrington Manor	71,014	66,021	68,245	138,190	96,828
Janes Island	113,217	131,511	145,136	64,634	152,904
Martinak	72,616	75,444	72,908	39,196	69,114
New Germany	42,332	37,062	30,161	729,304	38,639
Patapsco Valley	887,300	1,226,691	1,214,148	13,918	630,939
Patuxent	6,866	23,648	23,467	96,622	9,116
Pocomoke River	195,875	201,956	193,251	35,387	141,215
Point Lookout	151,975	178,240	342,827	413,219	316,218
Rocks	179,979	250,963	115,119	191,358	157,340
Rocky Gap	152,862	243,987	213,435	255,671	216,583
Sandy Point	480,914	508,149	537,306	526,690	440,610
Seneca	5,370	6,975	8,107	11,691	10,544
Smallwood	53,144	55,513	47,063	48,223	46,313
Soldiers Delight	1,936		5,030	4,773	4,842
Susquehanna	110,665	120,522	99,371	84,371	77,130
Swallow Falls	125,600	126,522	74,401	188,226	191,878
Tuckahoe	7,405	29,335	22,630	34,236	33,966
Washington Mon.	133,431	138,787	144,033	142,776	137,220
TOTALS	5,030,698	6,612,869	5,744,299	5,559,510	5,064,012

WATER RESOURCES ADMINISTRATION

The Water Resources Administration is responsible for the protection, management and enhancement of the water resources of the State. Through enforcement, permitting and planning activities, the Administration seeks to insure the quality and quantity of the waters of the State for all legitimate uses.

Budget

General Funds	\$3,329,507.00
Special Funds	806,874.00
Federal Funds	1,487,045.00
Number of Staff	191

The Water Resources Administration also was able to exact \$5,000 in fines from pollution law violators.

GENERAL DIRECTION

This activity is responsible for the overall direction, supervision and coordination of activities within the Administration. It also coordinates the Administration's review of State Clearinghouse projects in FY '79.

WATER AND WASTE MANAGEMENT

This program is under Natural Resources Article Title 8 responsible for the State and Federal (NPDES) discharge permits to industrial facilities, the State's Hazardous Substances Waste Control Program, and the State's water supply planning and appropriation programs. The program is organized in two divisions - Industrial and Hazardous Substances, and Water Supply.

Industrial and Hazardous Substances Division This Division has primary responsibility for issuing and reevaluating State and NPDES discharge permits to industrial and commercial facilities, as well as implementation of the State's Hazardous Substances Control Program (Section 8-1413.2 of the Natural Resources Article, Annotated Code of Maryland), which includes permitting of facilities for disposal of hazardous substances, certification and licensing of haulers a waste manifest system and management of the Hazardous Substances Control Fund. The Division is also responsible for implementation in Maryland of the Federal Hazardous Substances Program under the Resource Conservation and Recovery Act of 1976. Other duties and responsibilities of the Division include:

1. Reviewing compliance plans submitted in accordance with issued discharge permits as well as orders issued by the Administration's Enforcement Program.
2. Issuing State Certification to the Internal Revenue Service for pollution control facilities under the Rapid Tax Amortization Program.
3. Issuing "need and adequacy statements" to the Small Business Administration regarding loans for pollution control purposes.
4. Issuing permits for use of toxic materials for aquatic life management purposes.
5. Evaluating the effects of dischargers on receiving streams and evaluating various treatment technologies or process modifications and the degree of pollutant reduction attainable by their implementation.
6. Developing a consolidated permit program including the following Federal/State Programs: Discharge (NPDES) Permits, Hazardous Substances (RCRA) Permits, Underground Injection Control (UIC), and the dredge and fill program.

Hazardous Substances	FY 78	FY 79
Hazardous Substances Disposal Facility Permits	3	53
Hazardous Substances Haulers	78	92
Vehicle Certificates	244	349
Drivers Licensed	—	331
Hazardous Waste Manifests	—	15,000
Industrial Discharge Permit		
Discharge Permits	118	83
Permit Modifications	107	32
Toxic Materials Permits	96	52
Thermal Study Reviews	—	15
Compliance Plan Reviews	192	202
Bond Issue Certification	—	—
SBA Need and Adequacy Statement	1	2
Rapid Tax Amortization Certification	—	2

Water Supply Division The Water Supply Division is responsible for the State's water supply planning program (Section 8-203 of the Natural Resources Article, Annotated Code of Maryland), the well drilling permit program (Sections 8-603 and 8-604), the well abandonment program (Section 8-605), the water appropriation permit program (Section 8-802) and the triennial review of issued appropriation permits (Section 8-811). These activities involve close coordination and cooperation with the Maryland

Geological Survey, county health departments, the Department of State Planning and the Department of Health and Mental Hygiene - Environmental Health Administration. In addition, the Water Supply Division serves as the Administration's liaison with the Maryland Geological Survey for the U.S. Geological Survey Cooperative Water Resources Program and receives federal assistance under Title III of the Water Resources Planning Act, P.L. 89-90. The Division evaluates the environmental impacts of water withdrawals, determines the adequacy of water supplies used or proposed for use by local jurisdictions, industries, and commercial facilities, and resolves conflicts between competing water users. Through the permit and planning activity, the Division maintains records on the amount of water used throughout the State, records water appropriations, and inventories all wells drilled in Maryland.

	FY 78	FY 79
Well Permits Issued	14,707	11,750
Appropriation - New Permits Issued	758	460
Appropriation - Existing Permits Modified	217	205

The following reports were published:

1. Maryland Water Supplies Needing Improvement
2. Management of Maryland's Hydrogeologic Information
3. Maryland Water Use Report - January-June, 1978

WATERWAY CONSTRUCTION

This Program is responsible for the issuance of water use permits, certifications and approvals pursuant to State law and regulations relating to wetlands, watershed management, flood management and dam safety. Also included in this program is non-point source pollution control activities.

Wetlands Division This Division is responsible for (1) issuance of wetlands permits and approvals for the regulation of dredging, filling and storm sewers in private wetlands; (2) making recommendations to the Board of Public Works on the issuance of a wetlands license for works in State wetlands; (3) issuance of certifications to federal agencies on the impact on water quality proposed projects involving dredging and/or filling in navigable waters; and (4) review and comment on all other applications for Corps of Engineers' permits to place any fixed works in waterways. The permit and licensing procedures for these activities involve site inspections, evalua-

tions and public hearings. In addition, this Division provides advisory services to prospective applicants on modifications and/or alternatives to proposed works which will minimize adverse effects on the environment.

	FY 78	FY 79
Board of Public Works Licenses	366	459
Department of Natural Resources Permits	52	35
Department of Natural Resources Approvals	21	38
Water Quality Certificates	337	433
Water Quality Certificates (Review)	317	424
Advisory Services, Specific Projects	--	400
Federal/Other Reviews	--	425
TOTALS	1,093	2,214

The following reports were published:

1. An atlas of vascular plant species distribution maps for tidewater Maryland, Md. Dept. Natural Resources Water Res. Adm. Wetland Permit Section. Wetland Pub. No. 1. 280 p.
2. A review of the biology, ecology, and management of *Scirpusolneyi*. Vol. I: An annotated bibliography of selected references. Md. Dept. Nat. Res. Water Res. Adm. Wetland Permit Section. Wetland Pub. No. 2. 96 p.
3. A bibliography of Maryland's tidal wetlands (marshes-swamps). Md. Dept. Natural Resources, Water Resources Administration, Wetland Permit Division, Wetland Pub. No. 3.
4. A Review of the biology, ecology and management of *Scirpusolneyi*. Vol. II: A synthesis of selected references. Md. Dept. Natural Resources, Water Res. Admin., Wetland Permit Section, Wetland Pub. No. 4. 85 p.

Watershed Management Division This Division is responsible for the issuance of eight (8) types of permits/approvals/licenses: Small Ponds; Waterway Obstructions; Waterway Constructions; Temporary Waterway Construction; Erosion and Sediment Control; Maintenance and Repairs; Surface Mining Licenses and Surface Mining Permits. The Division makes site inspections and conducts technical evaluations and/or reviews of proposed projects leading to a permit decision. In addition, advisory services are provided to prospective applicants on measures and alternatives to proposed works which will minimize adverse effects on the environment.

	FY 78	FY 79
Small Ponds	8	2
Waterway Obstructions	7	7
Waterway Constructions	220	129
Temporary Waterway Constructions	225	123
Maintenance and Repairs	83	69
Erosion and Sediment Controls	113	184
Surface Mining Licenses	47	161
Surface Mining Permits	90	26
Other Reviews	—	353
TOTALS	793	1,054

Flood Management Division This Division is responsible for (1) coordination and promotion of the National Flood Insurance Program, (2) technical assistance to local subdivisions including advice on local ordinances, watershed modelling and other matters related to flooding, flood management and stormwater management, (3) floodplain delineations, and (4) development of hydrologic data and methods of handling floods. In 1976, legislation was enacted establishing the Flood Hazard Management Act of 1976 which mandates comprehensive planning and design of flood management programs.

	FY 78	FY 79
Watershed Technical Studies Completed	2	1
Flood Management Plans Completed	0	0
Communities in Emergency Flood Insurance Program	86	74
Communities in Regular Flood Insurance Program	25	38

Dam Safety Division A restructured Dam Safety Program was established during FY '78 to centralize existing State obligations in this area and as a response to a renewed interest in the National Dam Inspection Act of 1972. Under this Act, Phase I - Safety Inspection Reports for all Class I dams are to be accomplished by the Corps of Engineers over a three-year period. Toward this end, Maryland has entered into an agreement with the Corps which calls for (1) updating the State's portion of the National Dam Inventory and (2) performing and/or assisting in Phase I Inspection Reports. Initial Inspection Reports will be prepared independently by the State for those dams

not included in the agreement with the Corps of Engineers. Additionally, a Small Pond Inventory will be maintained from which inspections will be made to determine eligibility of small ponds for dam status.

	FY 78	FY 79
Phase I, Inspections/Reports (Federal/State)	6	14
Inventory Inspections (Federal/State)	5	89
Initial Inspection Reports (State)	—	3
Small Pond Inspections (State)	—	—

Non-Point Source Management Division This Division is responsible for the development and implementation of programs for the control of non-point pollution. Sources of non-point pollution originate in surface runoff which is directly related to uses of land; e.g., agriculture, silviculture, surface mining and land development.

In FY '79 this Division concentrated on the development of the "Statewide Agriculture Water Quality Management Program for the Control of Sediment and Animal Wastes". This program was adopted by the Governor on July 5, 1979. In FY '80, and '81, the Division will assist in implementing this program in every Soil Conservation District in Maryland.

In an effort to make a preliminary determination of the impact of non-point pollution, the Administration contracted with Soil Conservation Districts in certain areas to provide land use information. All Districts have initiated work pursuant to these contracts and 10 Districts have completed the work. It is anticipated that the remaining contracts will be completed during FY '80. The Administration has also entered into contracts with the Baltimore Regional Planning Council and eight Soil Conservation Districts to map critical areas for sediment and animal wastes. It is expected that the contract with the remaining 11 Districts will be executed in FY '80 and the work on all contracts will be completed prior to FY '81.

In FY '80, the Division will complete the development of a comprehensive stormwater management program. It is anticipated that this program will be ready for adoption and implementation by FY '81.

PLANNING AND EVALUATION

This program is responsible for administering and consolidating major planning, program development, regulatory and service activities dealing with water quality monitoring and laboratory analyses, water quality investigations, and planning and regulation for municipal waste discharges.

Laboratory Services The Laboratory Services Division performs chemical, physical and bacteriological analyses of water, wastewater, sediments and aquatic life for the programs of the Administration and other agencies within the Department of Natural Resources. The present laboratory facilities include the main laboratory located in Annapolis and a regional laboratory located in Cumberland. Laboratory determinations can also be performed aboard the vessel "Monitor" or on mobile trailers for analysis in the field.

	FY 78	FY 79
Chemical	142,557	88,000
Bacteriological	4,593	4,500
TOTALS	147,250	92,500

Field Operations The Field Service Operations is responsible for the collection of physical, chemical, biological and bacteriological field data. This Division performs surveys work designed by the Technical Analysis Division and, in addition, is responsible for portions of the federally-mandated Basic Water Monitoring Program (CORE). A major program activity is compliance monitoring of permitted wastewater discharges.

Following is a tabular summary of these activities:

Type of Surveys Performed:	FY 78	FY 79
Physical/Chemical/Bacteriological Statewide BWMP (CORE) Sampling (Station visits)	1,580	620
Biological Statewide BWMP (CORE) Sampling (Station visits)	200	220
River Basin Intensive Surveys (Physical/Chemical/Bacteriological/Biological) (weeks)	11	15
Compliance Monitoring (Dischargers)		58

Technical Analysis Division This Division provides review, evaluation, analysis, project design, project supervision and recommendations to meet the need for surveys, data collection, data management, math modelling, standards and regulations revision and other problem analyses requirements of WRA programs. Responsibilities include providing these services for activities and investigations performed under Sections 201, 208 and 303(e), Federal Clean Water Act of 1977, NPDES discharge permit system, Federal Resource and Recovery Act of 1976 (P. L. 94-580), geographically selected intensive studies, and water quality monitoring. The Division is responsible for participation in EPA's Chesapeake Bay Pro-

gram and in Maryland's dredging and spoil disposal programs. The following is a tabular summary of activities falling within the purview of the Division:

	FY 78	FY 79
Dredging and Disposal Monitoring Surveys (physical, chemical, bacteriological, biological) (at least one year each)	2	2
River Basin Intensive Surveys (physical, chemical, bacteriological, biological) (at least one year each)	2	4
Chesapeake Bay Program Projects (physical, chemical, bacteriological, biological) (1 to 2 years each)	3	13
Special Design Water Quality Studies		

Municipal Permits Division This Division is responsible for regulating the discharge and disposal of municipal waste and wastewater, including the following: (1) the issuance of State and NPDES discharge permits for municipal point source wastewater discharges to surface waters; (2) conducting technical evaluations of the effect of wastewater discharges on receiving waters; (3) making technical determinations of the environmental effects of wastewater discharge alternatives, including land disposal, mandated under Section 201, Federal Clean Water Act; (4) the issuance of State discharge permits for municipal and related wastewater discharges to the land; (5) the review and evaluation of requests for significant modifications to State and NPDES discharge permits; (6) the review of compliance plans pursuant to orders from the Administration's Enforcement Division; (7) the review and comments on State Clearinghouse projects related to sewage treatment and collection systems; and (8) the review and evaluation of pretreatment ordinances required by the NPDES permits.

	FY 78	FY 79
Discharge Permits	40	21
Facility Plan Discharge Determinations	60	50
Agricultural Approvals	75	—
Permit Modifications	30	28
Compliance Plan Reviews	5	—
TOTALS	210	99

Planning Division The Planning Division has responsibility for developing and implementing a Water Quality Management Program for the waters of the State. The Division prepares Water Quality Management Plans for 12 major drainage areas in Maryland

under Section 303(e) and 208 of the Federal Water Pollution Control Act of 1972. The plans include the identification of water quality problems related to point and non-point sources of pollution, documentation of potential alternatives, costs and environmental impacts, and recommendations for actions concerning water quality management. Section 208 of the Federal law provides for planning grants to the states and/or regional planning bodies for areawide waste treatment planning. Federal construction grant funds awarded pursuant to Federal law must be consistent with the Water Quality Management Plans. The Division also provides oversight of projects which are funded by current grants, and identifies projects to be funded by future grants.

ENFORCEMENT

This program is responsible for the inspection and enforcement activities of the Water Resources Administration under the authorization of the Natural Resources Articles Titles 8 and 9 and the regulations adopted pursuant thereto, including oil control activities. The program is organized into four field regions: Western Maryland; Central and Southern Maryland; Northeast Maryland; and Eastern Maryland. Program personnel conduct both periodic and unscheduled surveillance by ground, air and water. Enforcement actions, either administrative or legal, are based on the nature, extent and impact of the violations. Primary emphasis is given to direct "in the field" corrective action and follow-up. A twenty-four hour duty roster is maintained through the Department of Natural Resources Police radio watch to handle emergency water pollution problems.

The Oil Control Division is responsible for the issuance of (1) Oil Operations Permits, (2) Oil Vehicle Operator's Certificates, and (3) Oil Terminal Facility Licenses as well as for the follow-up field enforcement work related to this activity. The Division is supported by the Maryland Oil Disaster, Containment, Clean-up and Contingency Fund. This special fund is maintained by license fees charged for oil storage facilities over 3,000 barrels. The Division has developed and obtained equipment for the use to

respond, to contain and clean up oil spills for inland waters, the Chesapeake Bay and other open waters throughout the State.

	FY 78	FY 79
Inspections of Non-Permitted Points of Discharge or Pollution Sources	2,452	2,687
Inspections for State Discharge Permits	5,601	4,750
Inspections for Oil Terminal Facility Licenses	300	280
Inspections for Oil Operations Permits	1,991	1,738
Inspections for Toxic Materials Permits	20	30
Inspections for Waterway Permits	3,027	3,581
Inspections for Appropriation Permits	185	132
Inspections for Small Pond Permits	110	116
Inspections for Surface Mining Permits and Licenses	1,559	1,296
Inspections for Well Permits and Construction	1,116	1,159
Inspections for State Sediment Control	1,405	1,540
Inspections for State Wetlands Licenses/Permits	2,491	2,689
Inspections for Hazardous Materials Permits	7	49
Other Inspections (Long-Range Monitoring - Local Problems)	416	557
Other - Miscellaneous	2,210	1,871
TOTALS	22,890	22,475
Complaints Received & Administered	1,280	1,482
Enforcement Actions (Administrative and Legal)	1,482	2,180
Oil Terminal Facility Licenses	157	155
Oil Vehicle Operator's Certificates	1,505	1,293
Oil Spill Response	429	275
Oil Operations Permits	279	400

NATURAL RESOURCES POLICE FORCE

Budget

General Funds	\$3,039,579.00
Special Funds	1,703,682.00
Federal Funds	279,480.00
TOTAL	\$5,022,741.00
Number of Staff	239

The Natural Resources Police Force is responsible for enforcement of all laws and regulations promulgated to protect the natural resources of Maryland, the State Boat Act and the criminal laws of Maryland on both tidal and non-tidal waters.

GENERAL DIRECTION

The **Headquarters** Section plans and provides administrative support and services for the operational divisions and houses the Central Communications Center which is manned 24 hours a day, 7 days a week by Marine Division personnel. The Headquarters Section has a staff of 15 uniformed and clerical personnel (6% of the total force) with a budget of \$242,591 (5% of the agency budget).

The **Police Academy** provides basic training for cadets and recruits and advanced training for field personnel. This section also provides various support activities to the operational divisions. With a staff of 2 uniformed officers who are responsible also for the Cadet Program (6% of the total force) and an operating budget of \$96,519 (2% of the agency budget) the activities of the Police Academy were carried out as shown on the accompanying table.

The **Maintenance and Supply** Section provides maintenance and repair service to the Natural Resources Police patrol boat fleet and associated equipment. The facility also serves as a centralized supply depot responsive to the police force as well as sister agencies. This section has a staff of 11 men (5% of the total force) and a budget of \$215,963 (4% of the agency budget).

The **Aviation Section** provides aerial services for the Natural Resources Police and other agencies. With a staff of 2 officers (1% of the total force) and a budget of \$41,210 (1% of the agency budget), services were temporarily suspended in August 1978 when the aircraft crashed. The crash resulted in the death of Harry L. George, Chief of the Marine Division.

INLAND ENFORCEMENT

The **Field Enforcement** Section is responsible for the enforcement of those laws pertaining to the protection of all wildlife species. In addition, it enforces the State Boat Act on non-tidal waters of the State and investigates criminal activities uncovered during the performance of its primary missions. There are 69 employees, 63 of whom are uniformed officers (29% of the total force) with a budget of \$1,691,963 (33% of the agency budget). The division performed activities as set forth on the accompanying table. The Investigative Unit as shown in the table was disbanded in 1979 due to a lack of funds and personnel to operate same.

The **Hunter Safety** Program provides mandated classroom training and lectures on a statewide basis to insure firearm safety and good hunting practices. Operating expenses for a staff of 6 which includes 5 uniformed officers (2% of the total force) amounted to \$146,347 (3% of the agency budget).

MARINE ENFORCEMENT

The **Field Enforcement** Section is responsible for the enforcement of all laws and regulations pertaining to the protection of natural resources within the tidal waters of the State. The division also enforces the State Boat Act on tidal waters and investigates criminal activities uncovered during the performance of its primary missions on the Chesapeake Bay and its tributaries. With 119 employees, which includes 117 uniformed officers, (50% of the total force) and an operating budget of \$2,513,519 (50% of the agency budget), the division performed the activities as set forth on the accompanying table.

The **Boating Safety** Section conducts a home study course designed to promote public safety and prevent boating accidents. A staff of 2 (1% of the total force) with a budget of \$74,654 (2% of the agency budget) distributed 8,913 Basic Boating Courses and was responsible for incorporating the course in the curriculum of 34 schools in Maryland. Activities conducted are set forth on the accompanying table.

**NATURAL RESOURCES
POLICE FORCE ACTIVITIES**

	FY 78	FY 79	Change
HEADQUARTERS SECTION			
Calls received	20,730	38,238	+ 84%
Public relations details	157	170	+ 8%
Police Academy (Staff Hours)			
Cadet training (hiring freeze)	12,179	9,573	- 21%
Recruit training	6,468	7,899	+ 22%
Inservice training	3,983	4,468	+ 12%
Maintenance and Supply Section			
Store requisitions	1,775	1,574	- 11%
Repair job orders	1,117	1,176	+ 1%
Aviation Section			
Hours flown (plane crashed)	97	5	- 94%
Cases made	48	0	-100%
INLAND DIVISION			
Field Enforcement Section			
Arrests	2,003	2,001	0%
Warnings			
Fishermen checked		37,217	
Hunters checked		28,522	
Boaters checked		4,763	
Trappers checked		712	
Vehicles checked		1,369	
Telephone calls rec'd. - office	39,192	33,622	- 14%
Telephone calls rec'd. - home	20,692	18,257	- 12%
Investigation Section			
Investigations made		2,294	
Hunter Safety Program			
Students certified	15,511	10,461	- 32%
Volunteer instructors	708	577	- 18%
Accidents	40	22	- 45%

	FY 78	FY 79	Change
MARINE DIVISION			
Enforcement			
Arrests	3,114	3,169	+ 1%
Warnings	2,841	2,328	- 18%
Confiscations		1,062	
Boat inspections	123,404	97,382	- 21%
Seafood establishments inspected		13,105	
Vehicles inspected		818	
Assists to public	2,012	1,315	- 34%
Persons rescued by assists		3,529	
Public relations details		107	
Telephone calls - home		9,782	
Visits from public - home		962	
Investigation Section			
Investigations		97	
Warrants (Marine & Inland)	101	218	+ 116%
Stolen boats	218	222	+ 1%
Recovered boats	127	92	- 27%
Stolen motors	92	49	- 46%
Recovered motors	25	7	- 72%
Stolen articles		114	
Recovered articles		14	
Accident Investigation			
Boating accidents	222	185	- 16%
Boats involved	303	321	+ 05%
Property damage		\$536,665	
Injuries		28	
Deaths		32	
Boating Safety Program			
Students certified		2,766	
Boating Safety assignments		170	

WILDLIFE ADMINISTRATION

GENERAL DIRECTION

The wildlife resources of Maryland are widely used by citizens who spend millions of dollars each year in pursuit of wildlife related recreation. Approximately 200,000 sportsmen pursue game animals and thousands more enjoy the aesthetic values of wildlife.

The Wildlife Administration's goal is "the enhancement of wildlife populations to meet the demand of wildlife oriented recreation and to ensure the continued survival of wildlife in the state."

Maryland's wildlife management and research efforts are financed almost entirely by hunters; thus the major emphasis of wildlife management is directed toward game animals. However, all wildlife species are considered in management decisions with the result that non-game animals benefit from game management practices.

Responsibilities of the Wildlife Administration include regulating seasons, bag limits, and methods of taking game animals, assisting other state agencies and private landowners in land management and wildlife planning, issuing permits and licenses for activities that directly affect wildlife, providing technical assistance for nuisance wildlife control, and managing areas for public wildlife enjoyment, including hunting, trapping, field trials, nature study and photography.

Five agency programs comprise the Wildlife Administration. They are: General Direction, Wildlife Management Services, Wildlife Services, Wildlife Field Services, Wildlife Technical Services and Nontidal Fisheries.

During fiscal year 1979 each program monitored distribution abundance and the habitat changes affecting their respective wildlife species. Information was presented to the public through correspondence, reports, news releases, and public meetings.

The Wildlife Administration was affected by a Departmental reorganization during the year. The affect of this reorganization was to consolidate several units which used hunting and fishing license monies under one unit head who would be able to administer the funds in a more efficient manner. Also, this reorganization has the effect within the agency of telecoping seven programs into four. This streamlined organizational structure and created more efficient administration. We added to our

organization structure a program called Nontidal Fisheries, which was transferred from the Fisheries Administration and we also assigned operational responsibility of the Inland Division of the Natural Resources Police.

Wildlife Management Services This section is comprised of five staff biological programs. These staff programs are responsible for planning, conducting and evaluating all wildlife surveys, developing and applying management technique; preparing annual status reports, developing recommendations for regulating public use, and introducing and restoring wildlife species.

Forest Wildlife Programs This program is responsible for management of wild turkey, white-tailed deer, sika deer, ruffed grouse, gray squirrel, eastern fox squirrel and red (piney) squirrel species. These wildlife species currently provide over one million hunter days of recreation afield.

Ongoing investigations were conducted to determine mortality rates for the white-tailed deer and gray squirrel. Also, the second year of a five-year life history study on the sika deer was conducted. The study provided useful data on the home range and habitat preferences of these animals. Population trend surveys on deer, grouse, squirrels, and turkeys were also conducted.

Furbearer and Marine Mammal Program This program is primarily responsible for the management of eighteen species of furbearers in Maryland. The 1978-79 annual furbearer harvest generated over \$3,000,000 of new money to Maryland's fur harvesters. A Marsh Ecology and Furbearer Management Program was conducted at the Cambridge High School and various public and private projects involving furbearer habitats were reviewed.

The program staff continued four extensive research projects on raccoon, bobcat, gray fox and nutria through contracts with the Appalachian Environmental Laboratory.

Waterfowl Program The wetland wildlife species considered in the Migratory Waterfowl Program include eight species of dabbling ducks, eleven species of diving ducks, five species of seaducks, three species of geese, two species of swans, and the American coot, combined into a category termed waterfowl; plus the Florida gallinule, six species of rails and the jacksnipe.

January 1979 waterfowl surveys indicated that total waterfowl - 873,400 - in Maryland increased in comparison to the January 1978 estimate of 753,900. Decreases were noted primarily among mallards, black ducks, snow geese and Canada geese. Extensive ice coverage caused by prolonged freezing again reduced some feeding areas.

Surveys of the changes and conditions of waterfowl habitat indicated a slight decrease in bay grasses from the last fiscal year. Experimental transplanting of submerged seagrasses was started to determine the limiting factors. Evaluation of pen-reared mallard releases was continued. An education program on steel shot regulation for waterfowl hunters was also continued.

Nongame and Endangered Species Program This program includes species of wildlife not legally classified as game birds or mammals and those species threatened or endangered. These include thirty-seven species of amphibians, forty-six species or reptiles, two hundred eighty species of birds, and fifty-one species of mammals.

The coordination of research responsibilities includes program planning and issuing endangered species, bird banding, and scientific collection permits. The Endangered Species Project of Maryland Wildlife Administration is continuing several studies initiated over the past years. A cooperative agreement for the conservation of endangered species was signed with the U.S. Fish and Wildlife Service in 1976 making the state eligible for matching funds.

Several raptors were rehabilitated and released into the wild through the cooperation of licensed veterinarians

Upland Wildlife Program. The Upland Wildlife Program is responsible for the management of rabbits, quail, pheasants, doves, woodcock, and crows and the recreational use of these species in Maryland.

Research studies were conducted on the nesting success of mourning doves in Maryland and the hunting mortality rates on quail and rabbits on selected wildlife management areas. Trend surveys were continued on all upland species.

A hunter-use survey of licensed hunters in Maryland was completed to obtain estimates of numbers of hunters, efforts expended, and harvest for selected game species.

An "Acres for Wildlife" program was initiated to: 1) protect, improve, or create upland wildlife habitats on private lands and rights-of-way, and, 2) create an awareness of what upland wildlife habitat

actually is and the need for management.

Wildlife Field Services Program As the name implies, this program performs the primary field operations for the Administration. The program carries out wildlife management practices on state forests, state parks and administration-owned properties as well as cooperative lands. It also serves other agency programs by providing the hands-on-work required of the five biological staff projects. The program serves the public directly by dissemination of information regarding policy and regulations, technical assistance in planning wildlife management practices and handling animal problems as well as providing areas on which the interested public can find hunting and other forms of appreciative recreation. The total acreage of State Wildlife Management Areas is 78,338 plus 47,200 of leased land under the Cooperative Hunt Program.

Wildlife Technical Services Program This program conducts the environmental review and assessment of federal, state and local projects as they affect the wildlife resources of the state.

The Environmental Review project has concentrated on better coordination and review of wetland projects, roads and bridges, and SCS PL 566 drainage projects.

The Resources Planning project has completed the production of base maps (600 scale) for all the wildlife management areas, to be used in preparing wildlife management area plans for each district.

The Special Planning Project, initiated in 1978, has completed wildlife management plans on five major non-public areas in order to increase wildlife benefits.

Nontidal Fisheries The Nontidal Fisheries is responsible for inland fishery resources. The waters included within this program's management responsibility are all streams, rivers, ponds, lakes and canals publicly or privately owned extending to the tidal boundaries designated by law. The two divisions that make up this program are coldwater and warmwater. The warmwater division involves itself with warmwater fisheries development, warmwater fisheries investigations and reservoir fisheries investigations and Potomac River investigations. The coldwater division strives to provide the greatest amount of public trout fishing within existing environmental limitations while at the same time preserving, improving and enhancing the natural trout resources within the state.

Cold Water Fisheries. A new trout production and distribution record was set by the Cold Water Fishery Program during Fiscal Year 1979. A total of 293,340 catchable size trout, weighing a total of 109,980 pounds (55 tons) were stocked into thirty-six streams and twenty-one impoundments within the State, open to public fishing. Approximately 16,000 two year old trout, averaging fifteen inches in total length, are included in these figures. Annual stocking of a significant number of two year old trout has become a very popular program with the trout fishermen of the State. The number of trout stocked was a 6% increase over Fiscal Year 1978, and a 33% increase over Fiscal Year 1977. In addition, approximately 200,000 surplus fingerling trout were stocked into selected waters of the State to provide future trout fishing. Some of these trout were stocked into farm ponds which had water quality suitable for trout survival.

Trout stocking during Fiscal Year 1979 was not limited to rainbow trout. The species composition of stocked trout was as follows:

rainbow trout	218,440
brown trout	50,000
brook trout	24,900

The number of trout stamps sold during Fiscal Year 1979 also set a new record. A total of 38,634 individuals purchased a trout stamp during the year. This was a ten percent increase over the number sold during Fiscal Year 1978.

Field operations of the Cold Water Fishery Program remained primarily directed toward activities associated with Federal Aid Project F-26-R, "Survey and Inventory of Maryland Trout Waters". The work performed within the scope of this project has resulted in the reimbursement of over \$40,000. to the Department of Natural Resources by the United States Department of Interior during Fiscal Year 1979. Stream survey activities were concentrated on the completion of the initial "overall look" at the streams of the State prior to December 31, 1979, in order to determine the location of existing natural trout populations as well as those streams which may have a potential support such populations.

Limnological studies of selected impoundments were begun during Fiscal Year 1979 to determine their potential use for cold water fishery management. Emphasis was placed upon Greenbrier Lake (Washington County), Hunting Creek Lake (Frederick County), and Lake Needwood (Montgomery County). Preliminary analysis of the data which has been collected indicates a potential for cold water fisheries management.

Trout fishing returned to Baltimore City during Fiscal Year 1979. As a result of the cooperative efforts of the City of Baltimore, Maryland Chapter of Trout Unlimited and the Cold Water Fishery Program an "Urban Trout Fishing Program" was initiated within and immediately adjacent to the City of Baltimore. Approximately 1,500 trout were released in Herring Run and Jones Falls. The Baltimore Sun stated that these trout were the first to be reported caught in the city since World War II. A similar program was also begun for the Washington, D.C. suburbs utilizing Lake Needwood (Montgomery County).

Warmwater Fisheries. During FY 79 Maryland had over 150,000 licensed anglers fishing in over 50,000 surface areas of non-tidal fresh fishable waters. Included as part of this figure are 29,196 surface acres of fishable streams and rivers. An estimate of total production of these non-tidal waters has been calculated to be 10.7 million pounds.

At present, the Joseph Manning Warmwater Fish Hatchery is still under construction. Limited production of warmwater species, primarily largemouth bass, will start in 1980.

Approximately 55 lakes and ponds were checked by program personnel. Five reservoirs were studied and large and smallmouth bass spawning was normal.

For the first time in many years, walleyes were stocked in the Potomac River, approximately 1,000,000 fry being stocked between Harpers Ferry and Williamsport. They will contribute an additional sport fish and at the same time help to reduce abundant rough fish populations.

Assessment of the Conowingo Dam on the resident smallmouth bass population, water quality, and shad run revealed that temperatures and dissolved oxygen levels were not as critical in 1979 as in 1978. The decline in shad populations is continuing and the smallmouth bass population was similar to 1978 levels.

Studies on the Potomac River were concluded in 1979 with surveys on the Monocacy, Conococheague and Antietam. A final report will be completed in 1980 and made available to the public.

A final report of the Deep Creek Lake studies was completed and published in 1979.

Fishing maps of Rocky Gap and Greenbrier Lakes were prepared and made available to the public.

The first year of the Youghiogheny River study encompassed 10 sample stations for water quality, and fish and benthic macroinvertebrate collections. Water quality was good except for the Crellin area.

TIDEWATER ADMINISTRATION

The Tidewater Administration, created on July 1, 1979 by Chapter 601 of the Maryland Code, brought under one Administration the Coastal Resources Division, the Waterway Improvement Division, the Tidal Fisheries Division and the General Direction Program which includes all executive vessels and tidewater facilities, sports fishing and commercial fishing liaison activities, and the State Boat Act responsibilities. These activities are supported by a staff of 149 technical and specialized professionals with clerical and secretarial staff of 16 with a budget close to 12 million dollars.

GENERAL DIRECTION

This activity is responsible for the overall direction, supervision and coordination of activities within the Administration. It is broken into three areas:

Administration and Support This group provides administrative and clerical services in all phases of the operation. Budgets, contracts, personnel, purchasing and secretarial services are included with this function.

Boating and Fishing Liaison

Boating Liaison Boating Liaison is charged with the liaison between the Department and recreational boating activities within the United States Coast Guard, the Coast Guard Auxiliary, the National Weather Service, Corps of Engineers, United States Power Squadrons, most of the yacht clubs in the Chesapeake Bay Area, and thousands of individuals. The Guide for Cruising Maryland Waters is published by the Boating Liaison Office. In addition this office acts as the conduit between the Department and the Boat Act Advisory Committee.

Commercial Fisheries Liaison Commercial Fisheries maintains liaison with the commercial fisheries industry in Maryland. This involves coordination with the State watermen, wholesalers, State Health Department, the State Department of Economic Development, the Environmental Protection Agency and the University of Maryland Sea Grant Program. The Commercial Fisheries News is distributed free to 30,000 subscribers bimonthly.

Sport Fishing Liaison The Sport Fishing section of Natural Resources Information represents the

Department at sport fishing and recreation oriented exhibitions, shows, fairs, and tournaments. It is responsible for accurately informing and educating sport fishers and the general public of the status of the sport fishery resources and other water related sports and recreation. It maintains contact with outdoor writers and conducts the fresh and salt water Maryland fishing tournaments.

Tidewater Vessels and Facilities

Vessels In the past year the vessels under control of this group were the Maryland Lady, the Aurora, the Fifty-Fifty, and the Prowler. These vessels were used for executive travel and entertainment. Their function has been the promotion of the Chesapeake Bay and other Maryland waters. Numerous cruises were conducted through the year for the benefit of Maryland citizens.

Facilities The facilities currently under control of this group includes 69 Prince George Street, the Cambridge Boat Yard, the Matapeake Water Port and the State Pier in Annapolis. The maintenance and operation of these facilities for the benefit of the Tidewater Administration is a coordinated conjunctive effort which realizes the maximum utilization of facilities for the least dollar cost.

COASTAL RESOURCES DIVISION

Introduction The Maryland Coastal Zone Management Program, which has been under development for four years, received final approval on September 30, 1978. Fiscal Year 1979 thus marks the transition from development to implementation of the Program. The Program draws on the authority, expertise, and perspective of six state Departments, sixteen coastal counties and Baltimore City, and numerous federal agencies. The Coastal Zone Unit is charged with administration of the program, including a \$1,400,000 grant from the National Oceanic and Atmospheric Administration. It has the primary functions of coordinating among the many program participants, ensuring that all state and federal actions are consistent with the State's coastal resources policy, providing technical and financial assistance to local governments and State agencies and improving the quality and extent of coastal decision-making information.

The limit has six functional sections which carry out portions of the programs responsibility:

Intergovernmental Coordination Intergovernmental coordination is responsible for establishing and maintaining contacts with local governments, state

agencies, the federal government and other States.

Work agreements were continued or established between CZU and sixteen of seventeen local governments to provide financial and technical assistance for coastal resource planning and management decisions. Approximately \$280,000 was passed through to local governments in this manner. Work accomplished ranged from establishing tidal flood area bench marks in Dorchester County to establishing new zoning guidelines for marinas in Anne Arundel County.

Work with state agencies included establishment of Memoranda of Understanding on state goals, objectives and policies of the Coastal Zone Management Program. Three agreements were signed in Fiscal Year 1979 between the Department of Natural Resources and the Department of Economic and Community Development, Transportation, and Health and Mental Hygiene.

Work with federal agencies included naming representatives from each federal agency which influences coastal management to the Program's Coastal Resources Advisory Committee (CRAC). Procedures for determining the consistency of federal permit actions with the Coastal Zone Management Program were established and combined with the Water Quality Certification process already in effect.

Interstate activities included providing assistance to the Maryland-Virginia Legislative Advisory Commission on Chesapeake Bay and the initiation of discussions on the establishment of an executive interstate coordinating group with the Virginia Department of Commerce and Resources.

Public Participation The operation of the Program Advisory Group, the Coastal Resources Advisory Committee was strengthened and expanded to assist the Unit in the first year's implementation. Its activities included:

1. Dr. Bette Bauereis (Maryland Chamber of Commerce) testified on CRAC's behalf at Senator Mathias' Hearing on Coordination of Bay Management.
2. CRAC approved the appointments of Frank Gerred (St. Mary's County) and Richard Pollitt (Somerset County) as local government representatives on EPA's Chesapeake Bay Program Management Study Committee in order to provide local government perspective on the committee.
3. Responded to the Joint Maryland - Virginia Legislative Commission on Management Needs of the Bay.

4. Responded to a request of an Anne Arundel County citizen on residential development impacts in a recommended critical area and on sedimentation violations at a residential area by initiating inquiries to appropriate state agencies. The Maryland Critical Areas Program was reviewed and CRAC approved formation of a Critical Areas Task Force to provide additional recommendations for refining that program.
5. CRAC approved formation of a CZMP Priorities Task Force to assist CRD in developing program objectives during the next few years and to evaluate the Program progress year-to-year.
6. CRAC sent comments on the proposed Bauman/Mathias Bill on Research Coordination on the Chesapeake Bay to appropriate Congressional Committees.
7. CRAC approved local government projects for receipt of Coastal Energy Impact Funds for Baltimore City, Wicomico County and Calvert County.

The public participation effort also involved reaching the public with newsletters (distribution 5,000 copies), information series on Land Use Program (distribution 1,500 copies) and showing of public education films (2,100 viewers).

Program Review The Program Review section ensures that all coastal programs, procedures, rules and regulations, and activities are consistent with the State's official coastal zone policies. The section's efforts included analysis of boating congestion and utilization, development of new mooring buoy regulations, improving the available information on available shorefront access sites, reviewing local controls on development in shore erosion hazard areas, assisting the cities of Havre de Grace and Cambridge develop plans for improving urban waterfronts and serving as Department liaison for the Pocomoke River Basin Study.

Project Evaluation The Project Evaluation Section provides a comprehensive review of major development projects in the coastal zone to ensure the projects consistency with State coastal resources policy, to ensure the use of best available information and where necessary to provide new data necessary to permit agencies in a timely manner. The section carried out two extensive, comprehensive reviews of proposed developments in the Mayo Peninsula and the Gunpowder River delta; a less extensive review was provided on approximately 43 projects.

Special Problems Analysis The Special Problems Analysis Section is responsible for improving the quality and extent of management decision-making information necessary to ensure wise use of coastal resources. This function is carried out through a variety of inhouse and contractual studies including the following:

A *Boat Wake Study* is determining the impact of high speed motor boating on the small creeks and coves of Anne Arundel County.

Impacts of Open Water Marsh Management are being studied jointly with the Department of Agriculture to determine this techniques' usefulness in mosquito control.

The *Ocean Dumping Project* helps to determine the affect of EPA permitted ocean dumping on ocean quohog and surf clam resources.

The *Research and Management Data Base* is a computer tracking system for U.S. Army Corps of Engineers permits for shoreline alterations on Chesapeake Bay.

A *Choptank River Sediment Budget* is being developed to evaluate the relative levels of suspended sediments from channel dredging, shellfish dredging, upland erosion and natural sources.

Land and Gravel Maps of mineral resources existing in the metropolitan Baltimore region and land use and zoning restrictions which impact their availability.

Reasons for Success and Failure of Shoreline Erosion Structures in Chesapeake Bay are being evaluated through a comparison and analysis of over 30 structures, their design, method of construction, placement with regard to prevailing geologic and weather conditions.

An *Interim Erosion Control Plan* was developed to determine the ways in which Maryland might deal with erosion problems in Ocean City over the next ten years.

Coastal Fisheries The purpose of the Coastal fisheries section is to provide comprehensive assessment of Maryland's commercial and sports fishing industry, the resources on which they are based are the management measures in effect. During Fiscal Year 1979 a Commercial Fishing Industry Characterization was completed. A sports Fishing Survey and a Harvestable Yield Model were initiated and the identification of aquatic resource areas as Areas of Critical State concerns was begun.

The Coastal Energy Impact Program The Coastal Zone Unit also administers federal coastal energy impact funds which assist state and local governments in dealing with fiscal, economic, environmental and recreational impacts of coastal energy facilities. Three planning projects were initiated in Fiscal Year 1979: (1) a study of fiscal, economic, environmental and recreation impacts of existing and potential energy facilities and activities in Baltimore Harbor, (2) a safety analysis of the Liquefied Natural Gas terminal at Cove Point, Maryland, and (3) an assessment of effects of an existing petroleum storage and terminal facility and its proposed expansion at Piney Point in St. Mary's county. Federal funds for these projects total \$177,000.

WATERWAY IMPROVEMENT DIVISION

Mission. The mission of the Waterway Improvement Division is to develop, maintain, improve, and promote the recreational and commercial capabilities, conditions, and safety of Maryland's waterways for the benefit of the boating public and to protect the natural and physical resources of the waterway environment.

History. The Waterway Improvement program extends back to 1960 when the Maryland General Assembly enacted the Maryland Boat Act, designed to promote fully the development, use and recreational values of the Chesapeake Bay and its tributaries. The Act called for cooperation with neighboring states and the Federal Government in search and rescue operations, and in the enforcement of laws and regulations relating to boating safety.

A major change occurred in 1965 when the Maryland General Assembly adopted legislation providing, through a Waterway Improvement Fund, for development of one of the State's prime assets, its

natural waterways. The Fund became financed through a three percent title tax imposed on boat transactions in lieu of the three percent sales tax previously collected.

The purpose of the Waterway Improvement Fund was to finance dredging and marking of channels and harbors, clearance of obstructions and overabundant aquatic vegetation, and construction of facilities to benefit the boating public. It also provides funds for an educational program on boating safety.

The Waterway Improvement Division administers the provisions of the Maryland State Boat Act through the following three programs:

Hydrographic Operations. Hydrographic Operations is responsible for hydrographic engineering services in establishing, positioning and maintaining regulatory buoys; surveying and measuring the lengths of pound nets; ice-breaking operations during winter oyster harvest; determining requirements and needs for aids to navigation to mark channels for the boating public; hydrographic surveying to determine channel delineation and exact location of aids to be established; and all charting of the above functions.

In Fiscal Year 1979, Hydrographic Operations installed and maintained 1,060 regulatory buoys, 384 aids to navigation, and 8 artificial fishing reef stations. Compared to Fiscal Year 1976, when 900 regulatory buoys were maintained, the additional 260 aids represents a 33% increase. The number of aids to navigation maintained has also increased during the same period from 370 to 384. This program relocated 197 corners representing 1,678 acres of private oyster ground leases: the existing 1,060 total private oyster ground leases maintained by this program represents 9,033 acres of submerged land throughout Maryland. This compares to 1,148 private oyster ground leases representing 10,159 acres recorded in Fiscal Year 1970. However, upon completion of the Bay Bottom Survey, leasing of submerged lands will recommence. New applications on file for leases will have to be processed. Because of the moratorium, a five year backlog in applications has been accumulated.

Fiscal Year 1979 also saw this program mobilize its field survey teams to re-establish numerous triangulation stations of the 1,200 stations statewide system.

This program assisted Fisheries Administration in Fiscal Year 1979 by measuring oyster shell and oyster spat plantings and by reclassifying 1,222 acres of public oyster bottom to public clamming bottom. It

also assisted the Potomac River Fisheries Commission measuring and mark with buoys two oyster planting areas in the Potomac River.

The engineers of this program answered 14 requests to locate buoy or boat locations in Marine Police arrest cases and appeared in court 12 times as material or expert witnesses for the State. Forty man hours were spent in indoctrination and instruction of a Marine Police Academy Class in chart usage and navigation aids. Debris causing navigational hazards were removed from the Maryland's waterways in furtherance of Marine Service Operations functions.

A total of 385 vessel hours (1,925 staff hours) were spent in ice-breaking operations to keep a channel clear to Smith Island and selected harbors so that oystermen could continue their winter harvest. Forty vessel hours (280 staff hours) were spent in setting buoys and acting as committee boat in the Chesapeake Appreciation Day activities at the Rock Hall Regatta.

Dredging and Marine Services Operations. Dredging Operations is responsible for State waterway projects involving the dredging and protection of channels and harbors. Activities include conducting hydrographic and topographic surveys over proposed channel areas; design input of all State funded dredging projects; determining the need for protective jetties at project sites; designing and constructing jetties when needed; and performing maintenance surveys at previously completed channel dredging sites.

In Fiscal Year 1979, Dredging completed 5 projects valued at \$254,253 consisting of channel and harbor dredging and jetty and breakwater construction. Two survey crews completed 32 hydrographic surveys and 8 topographic surveys.

Since the first dredging project in 1963, the Dredging program completed 21 projects valued at \$46,400 during Fiscal Years 1963 through 1968; 46 projects valued at \$2,005,600 during Fiscal Years 1969 through 1973; and 31 projects valued at \$2,557,000 during Fiscal Years 1974 through 1979.

Currently the program has 38 active dredging, jetty, and breakwater projects with a construction value of \$3,983,629 in various stages of development. Not included in this total are 4 new applications being evaluated and processed with a construction value of \$1,127,000.

Marine Services Operations is responsible for general waterway maintenance conducted in channels, harbors, and areas of the Chesapeake Bay that are not maintained by the U.S. Army Corps of

Engineers. Activities include the removal of debris and derelict vessels from the Chesapeake Bay and tributaries; the installation of daymarker piles used as aids to navigation; the repair and maintenance of various public-owned facilities such as piers, bulkheads, launching ramps; small dredging operations associated with the above mentioned projects; and the establishment of artificial reefs. Winter activities include ice-breaking operations.

During Fiscal Year 1979, this program expended \$85,990 for the removal from Bay waters of 97 derelict vessels and barges while old piers and numerous pieces of miscellaneous debris removed from Bay waters and its tributaries accounted for 225 tons of material. Dredging projects were completed at Hurst Creek, Dorchester County; Spriggs Pond, Anne Arundel County; and Winchester Creek, Queen Anne's County. A floating dock was installed at Hart Island, 10 osprey piles were installed at Wye Island, and 130 piles were pulled at Gunpowder State Park, Baltimore County. Marine construction was also completed at Sandy Point State Park and Matapeake State Park. Six State boats were hauled at the recently refurbished Cambridge Railway for repair and maintenance. Two hundred ten boat hours (840 staff hours) were spent during winter ice breaking to keep channels open for commercial oyster boats. Approximately 1 month was spent by the M/V Big Lou and its crew in search and rescue operations after a commercial oyster boat with its crew was reported lost and missing.

Waterway Grants and Project Planning. Waterway Grants and Project Planning is responsible for the recreational development of the Chesapeake Bay and its tributaries with particular emphasis on projects and activities directly related to the general boating public. Specific activities include liaison with Federal and State agencies and county and municipal governments in promoting, designing, construction and financing marine facility projects.

To fund the projects described above, this program distributes their portion of the Waterway Improvement Fund in one of the five methods that follow: *matching funds* (50% Waterway Improvement Division, 50% governing body) for the construction of marine facilities beneficial to the boating public; *100% funding* by the Waterway Improvement Division for the construction of marine facilities beneficial to the boating public located within Department of Natural Resources owned land; *\$5,000 and \$25,000 grants* for construction projects and marine facilities beneficial to the boating public; and a maximum *\$75,000* interest free loan to a governing body to finance a waterway improve-

ment project.

During Fiscal Year 1979, this program has placed 2 Regional Boating Centers under contract for construction which will begin in the Fall: at Gunpowder State Park in Baltimore County and Elk Neck State Park, Cecil County. A third Regional Boating Center at Somers Cove, Crisfield, Somerset County will include a major State marina complex and adjoining facilities as well as the J. Millard Tawes Library and Visitors Center. Since the conception of the regional boating facility plan, 4 have been completed: 2 ahead of the estimated completion date (Sandy Point State Park in 1977 and the Baltimore Inner Harbor in 1978) and 2 on schedule (Point Lookout State Park in 1978 and Deep Creek Lake in 1977).

Fifty-six waterway projects including State Park boating facility projects, matching fund projects, and waterway grant projects with a construction value of \$2,814,336 were completed during Fiscal Year 1979. This brings the total of projects completed in this program since Fiscal Year 1966 to 542 valued at \$12,608,222 in construction costs.

There are 147 open projects in various stages of development with a construction value of \$5,820,234.

TIDAL FISHERIES

Budget FY 1979

General Funds	\$ 792,134.00
Special Funds	2,682,787.00
Federal Funds	491,678.00
TOTAL	\$3,966,599.00

The Tidal Fisheries Division of the Tidewater Administration is responsible for administering fisheries laws and managing the use of fishery resources for the benefit of Maryland citizens and industries. Most Division activities are directed toward conserving and enhancing resources to support traditional sport and commercial fisheries. The Division monitors and regulates harvesting activities, collects statistics, conducts surveys and biological investigations, stocks finfish, plants oyster shell and seed, and cooperates with other State and Federal agencies to monitor the status of Maryland's fisheries. Maryland landings of fish and shellfish for calendar year 1978 totaled 56,436,520 pounds valued at \$32,622,096.

The Tidal Fisheries Division operates through the following four programs:

Analyses and Verification Program. The program in FY 1979 was responsible for the collection of reports and compilation of the commercial fisheries harvest in the state. The project has processed and made available through state and federal distribution, a total of six years of data for the oyster fishery, five years of finfish and four years for the soft shell clam fishery.

A total of forty-nine fish kills were investigated during Fiscal Year 1979. This was six less than the number investigated during the previous fiscal year, and was less than the five year average of 51.8. Fish kills were documented in 19 of Maryland's 23 counties. Sixteen major kills of young or year menhaden were investigated in a twenty-two day period in FY 78. In FY 79 only one kill of this type was reported. (Four additional kills of menhaden from low dissolved oxygen in oceanside tributaries or embayments were investigated). The percentage of investigated fish kills caused by pollution remained very close to last fiscal year, with 22.4% of the total. Kills due to naturally occurring phenomena also remained relatively unchanged in terms of percentage of 24.6%. The cooperative efforts of the University of Maryland, the National Marine Fisheries Service, and this project have produced a possible explanation of the annual spring mortality of yearling menhaden. A virus was isolated from the tissues of dying menhaden collected during last year's die-off. Healthy menhaden reinfected with the virus died. Several more years of sampling are needed to definitely establish this as the cause.

The Marine Animal Disease Project is concerned with determining the effects of two pathogens on the oyster population. These are MSX, *Minchinia nelsoni*, the organism that caused devastation to the oyster beds of the lower Chesapeake Bay, and *Dermocystidium marinum*. A primary study area was the Manokin River, an area that was slowly recovering its oyster population after having been all but wiped out during the early 1960's. Oysters were collected from the river and examined for incidence of infection and indications of successful spawning activity. All evidence was that the area was slowly recovering, and the unanswered question was what had caused the decline of the pathogen. By FY 1979, MSX was not the devastating factor it was in 1968, however precautions have been instituted to monitor the disease. The primary objective of the project is to determine the geographic ranges and infection prevalences and intensities of abnormal physiological conditions affecting crabs, clams, and oysters in Chesapeake Bay and its tributaries. The project is carried out in cooperation with several state and federal agencies and one agency in the

United Kingdom and one in France. The investigations conducted by the project found several cases of MSX in the lower Maryland portion of the Bay in 1978. Monitoring is being maintained in this general area. Shell planting and seed areas are monitored to determine the presence or absence of diseased oysters.

Several thousand white catfish died during July 1978 in the Chester River from a bacterial disease. This was the first documentation of this bacteria infecting a species other than channel catfish, and occurring outside the states of Alabama and Mississippi. It is a newly discovered species of bacteria and is presently being studied in Auburn University.

Shellfish Program. The FY 1979 oyster catch was 2.1 million bushels, valued at \$14.5 million. Maryland oyster landings in 1978 were the highest in the United States.

Oyster management efforts continued in the primary areas of seed transplanting and shell planting. Shell planting programs and seed programs were submitted to the elected oyster committees in the tidewater counties for their review. 508,507 bushels of seed oysters were moved and planted on 90 bars. 524,608 bushels of fresh shells were planted in FY 1979. Dredged shell plantings were made on 43 oyster bars in FY 1979 totaling 5,605,105 bushels. Data analyzed by oyster propagation biologists show that dredged shell receive a higher number of oyster larvae per bushel than fresh shells.

Plantings of available seed oysters reflected the decreased natural spat fall during the last decade. In 1968, 1,181,288 bushels of seed oysters were moved from designated seed areas and planted on the public oyster bars compared with 508,507 bushels in 1978.

A cooperative Oyster Growout Project with the University of Maryland Center for Environmental and Estuarine Studies is continuing to study the feasibility of aquaculture to enhance oyster production. Several million oysters were hatched at the University of Maryland Horn Point hatchery facilities, and placed in holding tanks at Deal Island where their growth and survival were monitored. Larval oysters have been successfully hatched and demonstrate rapid growth. Hatchery seed oysters placed on bay bottom reserved for oyster propagation have exhibited excellent growth rates.

During the 1978 season, the soft clam industry

concentrated harvesting efforts in Talbot and Queen Anne's Counties. These counties accounted for 70% of the 1978 State total landings of 285,000 bushels. The landings, valued at 4.6 million dollars, were the highest since 1971. This significant increase in landings resulted from an excellent 1976 clam set, however, the 1977 set was lower and 1979 landings will probably decline. Bottom reclassification in 1978 added 1,222 acres of unproductive oyster bars in Kent and Queen Anne's Counties to public clamming bottom.

Commercial crab landings in 1978 were 17.5 million pounds (hard and soft crabs) valued at \$5.2 million. 1978 landings were the lowest in a ten year period since 1969 during which landings averaged 24 million pounds a year.

Crab samples taken in 1978 suggested that blue crab abundance in Chesapeake Bay during the spring and summer of 1979 would be down as compared to landings for the same time period from 1970 to 1976. Preliminary commercial landing figures for the 1979 crabbing season indicate the crab catch was down through July. During the month of May crabbing picked up significantly, however, during June and July the crab harvest dropped off. As the 1978 blue crab year-class entered the commercial fishery in late summer and fall, crabbing improved.

Samples taken in Chincoteague Bay in 1978 indicated that the spring and summer crab harvest there should be fair. Preliminary commercial landing figures show that the month of April was good in the ocean side bays. Crab landings there were the highest since 1975.

Technical Assistance. Maintenance and enhancement of the ecosystem and habitats which support aquatic organisms is central to responsibility for sport and commercial fish populations. The primary means by which the maintenance of fish habitat is addressed is that of commenting on and recommending proposals which will potentially affect the ecosystem.

In 1978, a total of 1,479 such projects were referred for review by Fisheries. 188, or about 13%, required a detailed written response. These fell into the following categories: National Pollution Discharge Elimination System permits, U.S. Corps of Engineers Permit applications (NABOPS) under

section 404 of PL 92-500, A-95 Clearinghouse projects, Title 8 of the *Natural Resources Article of Maryland* (surface water appropriations, waterway construction permits, channelizations, etc.), *Maryland Wetlands Law* permits, and miscellaneous such as information requests from consultants preparing environmental impact statements.

Tidewater Finfish. The Tidewater Finfish Program provides information needed for the management of resident, anadromous, and marine finfish.

The major efforts of our finfish program continue to be sampling and monitoring to document spawning and recruitment success in conjunction with other studies to document causes and effects of species abundance fluctuations. Striped bass in the species of greatest interest.

One of the more important papers issued in 1978 was entitled "The Status of Striped Bass and the Feasibility of Augmenting Maryland Striped Bass Populations Through Hatchery Stocking". Because of the decline of striped bass in recent years, popular sentiment favors stocking from hatcheries to augment wild populations. The Division cooperated in an effort by the Maryland Watermen's Association to raise and release striped bass in ponds near Elkton, Maryland.

The data and major information collected by the project are contained in Survey of Anadromous Fish Spawning Areas, an annual report for federally aided Project AFC-9-2 and The Occurrence and Abundance of the American Eel in Freshwater Streams of Maryland, a final report.

Marine species are being inventoried to establish a baseline of information on Maryland's coastal bays. Since its inception in 1972, the project has collected nearly 1,000 samples from the coastal bays and their tributaries. This has yielded a list of 187 species of both vertebrates and invertebrates, 93 of them finfish and several being new and unreported to the area.

An expanding market for eels has developed in recent years, therefore monitoring programs have begun on the migration of young eels as a predictive tool for future harvests. Results of this effort have aided several local ventures in the catching and marketing of eels both locally and abroad.

MARYLAND GEOLOGICAL SURVEY

Expenditures

General Funds	\$ 926,586.00
Special Funds	292,484.00
Federal Funds	272,139.00
TOTAL	\$1,491,209.00
Number of Staff	39

GENERAL DIRECTION

The mission of the Maryland Geological Survey is to: conduct topographic, geologic, hydrologic, and geophysical surveys, and to prepare topographic, geologic, and other types of maps to meet specific needs. The Survey prepares reports on the extent and character of the geology, mineral, and water resources of the State, and supervises provisions relating to archeology. The Maryland Geological Survey engages in, sponsors, and coordinates archeological research in the State; it encourages preservation of archeological resources, and disseminates information about the archeology of Maryland.

Through scientific investigation and analysis, the Survey seeks to obtain a better understanding of the geology, archeology, water resources, and mineral resources of the State; and to apply this knowledge to practical problems related to the earth sciences. Examples of such applications include water supply, water pollution, assuring continuing supply of mineral resources, the many ramifications of land use, the use of the Chesapeake Bay and Bay bottom, shore erosion and shore protection, and the preservation and study of archeological sites threatened by development.

Survey expenditures increased from \$1,167,287 in FY 78 to \$1,491,209 in FY 79. The increase resulted from an additional \$17,756 in Special Funds, \$34,027 in General Funds, and \$272,139 in Federal Funds.

PUBLICATIONS

New publications available for distribution in FY 79 include: Washington County Geologic Map, by J. Edwards, Jr.; Worcester County Geologic Map, by J.P. Owens and C.S. Denny; Quadrangle Atlas No. 8, Mount Vernon and Piscataway Quadrangles: Geologic and Environmental Atlas, by J.D. Glaser and K.R. Kuff; Quadrangle Atlas No. 9, Hydrogeologic Atlas, Westminster Quadrangle, Carroll County, Maryland, by E.G. Otton and J.T. Hilleary*; Basic Data Report No. 10, Maryland Ground-Water Information: Chemical Quality Data, by R.S. Woll*; Information Circular No. 26, 1976 Annual Report of the Maryland Geological Survey; Information Circular No. 27, 1977 Annual Report of the Maryland Geological Survey; Report of Investigations No. 28, Digital Simulation and Prediction of Water Levels in the Magothy Aquifer in Southern Maryland, by F.K. Mack and R.J. Mandle*; Report of Investigations No. 29, Upper Cretaceous (Senonian) and Paleocene (Danian) Pinchouts on the South Flank of the Salisbury Embayment, Maryland, and Their Relationship to Antecedent Basement Structures, by H.J. Hansen; Aeromagnetic Map of Maryland: I. Zietz, F.P. Gilbert, and J.R. Kirby†; List of Publications.

Reprints of publications available for distribution in FY 79 include: Allegany County Topographic Map, by J.D. McLennan; Baltimore County Topographic Map, by J.D. McLennan; Frederick County Topographic Map, by J.D. McLennan; Basic Data Report No. 1, Records of Wells and Springs in Baltimore County, Maryland, by C.P. Laughlin (microfiche only); Miocene Plates, by W.B. Clark and others; Eocene, by W.B. Clark and others; Archeological Studies No. 1, An Archeological Sequence in the Middle Chesapeake Region, by H.T. Wright. U.S.G.S. Quadrangles are now sold by the Survey who acts as authorized dealer for limited quantities of maps for Maryland.

*in cooperation with the U.S. Geological Survey, Water Resources Division

† in cooperation with the U.S. Geological Survey, Geologic Division

COMMITTEE ACTIVITIES

Through its Director, the Survey is involved with a number of intra-state and state-federal advisory activities. These functions include the Mid-Atlantic Governors' Coastal Resources Council; Association of American State Geologists; Interstate Mining Compact Commission; Interstate Oil Compact Commission; Committee on Surface Mining and Reclamation (COSMAR); National Academy of Sciences; and the Delaware Boundary Commission.

Thirty-four speeches, illustrated lectures and field trips were conducted. There were twelve press releases concerning new publications, ten news articles regarding Survey activities or publications, and three exhibits at local conventions.

HYDROGEOLOGY AND HYDROLOGY

The Hydrogeology and Hydrology Program, in cooperation with the U.S. Geological Survey, is responsible for the maintenance of a statewide water data network and the investigation of the hydrologic and geologic characteristics of Maryland water resources. The water data network provides necessary information on 1) minimum, maximum, and average stream flows for the planning of water supply and sewage facilities, water-power projects, dams, bridges, and other public and private works; 2) the amount of sediment load in the Potomac River Basin; 3) the ground-water levels in selected wells throughout the State to determine the hydrologic effect of long-term changes in pumpage land-use patterns and precipitation; and 4) the chemical quality of streams at selected localities.

Site-specific water-resources studies are undertaken to extend the inventory of water resources of the State and to determine water characteristics and rates of replenishment. During FY 1979, investigations were underway in areas of Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Garrett, Howard, Kent, Montgomery, St. Mary's and Washington Counties.

Stream-Flow Gaging Network. 82 continuous-record stream-gaging stations were in operation. In addition, 16 crest-stage, partial-record stations were operated. Data from these stations for the 1978

water year were compiled and published in Water Resources Data for the Maryland and Delaware, U.S. Geological Survey Water-Data Report MD-DE-78-1.

Water Quality and Sediment Network. Surface water samples were collected monthly for chemical analysis at four network stations and quarterly at nine other stations. Regular sampling at four suspended-sediment stations was continued in the Potomac River Basin.

Ground-Water Data Network. 101 Wells and springs comprise the regular network, and several hundred wells are being measured periodically as part of aquifer research projects.

Low-Flow Analyses. Discharge measurements were made at 86 low-flow sites. However, 44 of these sites were discontinued after having been judged adequate for basin comparison.

Garrett County Water-Resources Data Inventory. This project was completed in FY 79 and a report summarizing data on about 1,100 water wells in Garrett County is in review. Data from gas wells are included, in addition to selected coal test holes, springs, water-quality and water-use data, and stream-flow data from gaging stations.

Small Basin Modeling. Stream flow and ground-water level measurements continued in three small basins: 1) South Branch of the Casselman River near Bittinger, Garrett County; 2) tributary to Cattail Creek near Cooksville, Howard County; and 3) Marsh Run near Grimes, Washington County. Water-table maps were prepared for the latter two small basins. Work will continue into FY 80.

Hydrogeology of Carroll County. Hydrogeology atlases of 11 quadrangles are being prepared. They are the New Windsor, Westminster, Winfield, Hampstead, Lineboro, Finksburg, Littlestown, Manchester, Sykesville, Taneytown and Union Bridge Quadrangles. Each Atlas consists of five maps: 1) Location of wells and springs; 2) Depth to water table; 3) Availability of ground water; 4) Constraints on installation of septic systems; and 5) Land slope map.

Hydrogeology of Baltimore County. Atlases were prepared for the Ellicott City, Hereford and New Freedom Quadrangles. Field data collection was started in the Norrisville and Phoenix Quadrangles.

Geohydrology of the Poolesville Area of Montgomery County. A report was prepared for review in FY 79 incorporating data from 250 wells inventoried in the project area of which approximately 25 were sampled for chemical analyses.

Aquia/Piney Point Aquifer Studies. This study began in FY 79 and will incorporate new data over a three-year period for planning the role of the Aquia aquifer as a future water supply in Southern Maryland. Five observation wells were drilled and six more will be drilled in 1980 which will provide data for synoptic water-level maps for both the Aquia and Piney Point aquifers.

Potomac Aquifer Study—Upper Eastern Shore. A report is in preparation which will describe the field and computer processes used in making models of the Potomac aquifer system in the Upper Eastern Shore area.

Coastal Plain Aquifer Research. During FY 79 emphasis was placed on the Potomac Group aquifers. Deep exploratory test wells were completed in Kent County at Kennedyville and Rock Hall in Cecil County at Cecilton. Three wells were drilled in a cluster at Crofton Meadows in Anne Arundel County. All these wells obtained new data for mapping the distribution of fresh and brackish ground water in the deeper aquifers of the Potomac Group.

Hydrogeologic Aspects of Power Plant Siting. Funds budgeted for this project were used to support continued monitoring of observation well stations at Morgantown and Douglas Point in Charles County, Chalk Point in Prince George's County, Elms site in St. Mary's County, and Still Pond Neck and Fairlee in Kent County.

Coal Hydrology Study. Several large underground mines will be opened in Garrett County by the Mettiki Coal Company. The effect of mine dewatering on the local water table and stream network will be monitored by 2 observation well clusters to be drilled in FY 80.

ENVIRONMENTAL GEOLOGY AND MINERAL RESOURCES

This program has the responsibility for geologic and environmental mapping and research, topographic map revision, mineral and energy resource investigations, and dissemination of geologic information. Such studies provide the basic framework for delineating and managing the State's mineral and land resources, and thus generate the geologic data necessary for prudent land-use decisions. A relatively new approach in environmental mapping is the Mineral Resource and Mined Land Inventory Maps and maps of the Geologic Factors Affecting Land Modification.

The following investigations were in progress or completed in FY 79:

Geologic and Environmental Mapping. Geologic mapping continued in the Woodsboro, and Urbana 7.5 Minute Quadrangles, and was completed in the Finksburg, Phoenix and Upper Marlboro Quadrangles. Mapping was initiated in the Port Tobacco Quadrangle. To date, 25 quadrangles have been mapped and 8 published.

Topographic Mapping. A revision of the Kent, Baltimore, and Calvert County maps was begun during the year. Publication is anticipated in FY 80.

Mineral Resources. A study was completed in FY 79 in cooperation with the Coastal Zone Unit to outline areas in the Baltimore region with potential for future exploitation of sand and gravel. A limestone sampling and testing project was continued in cooperation with the U.S. Bureau of Mines.

The Prince George's County Mineral Resources and Mined Land Inventory Map was completed in FY 78 and is slated for publication in FY 80. The White Marsh Quadrangle Mineral Resource and Mined Land Inventory was compiled and is set for publication in FY 80. The Directory of Mineral Producers was revised and is to be published in FY 80.

Offshore drilling in the Atlantic continued. Fifteen dry holes and 2 non-commercial gas wells were drilled by as many as nine individual rigs operating at one time. Data were processed and distributed on the Chevron #B-3 Continental Offshore Stratigraphic Test in the Baltimore Canyon 100 miles offshore in 2,686 feet of water.

A Federally-funded geothermal drilling program has continued in the State as part of an overall Atlantic

Coastal Plain program. During FY 79, thirteen shallow (1,000 feet) wells were drilled and also a deep (5,562 feet) well near Crisfield in Somerset County. This program will continue into FY 80, with the possibility that additional wells will be drilled in the search for anomalous warm-water zones.

A guide to Maryland fossil collecting will be published in FY 80.

COASTAL AND ESTUARINE GEOLOGY

The Coastal and Estuarine Geology Program has the responsibility for basic and applied geological investigations in the coastal zone of Maryland. The overall objectives are to determine the processes altering the shorelines of Maryland and to characterize the physical and chemical aspects of the recent sediments of Chesapeake Bay. The program has two major projects: Applied Research Investigations and the Chesapeake Bay Earth Science Study.

Applied Research Investigations. The major activities involve monitoring shoreline changes along Chesapeake Bay and along the Atlantic Ocean. Measurements are conducted at 100 sites along Chesapeake Bay and 25 sites along the Atlantic Ocean shoreline.

Records from over ten years of Atlantic Ocean beach profiles have been compiled in a graphic format. These profiles are available for review by interested parties.

Chesapeake Bay Earth Science Study. The Chesapeake Bay Earth Science Study (CBESS) involved the bulk of the program time, funds and personnel. The study objectives are to investigate the physical, chemical, and biological characteristics of the bottom sediments of Chesapeake Bay. To accomplish these objectives, CBESS has three major task areas: Sedimentology, Geochemistry and Benthic Biology.

Sedimentology

The objective of this study is to determine the distribution and physical properties of the Chesapeake Bay sediments and to identify the sites of erosion or deposition of these sediments in the estuary.

To date, 2,100 (50%) of the sampling locations in the Bay have been sampled. Water-content determinations are completed for all samples collected and grain-sized analysis has been done for over 200 of the samples. A report entitled "Pattern and

Volume of Erosion and Deposition in the Annapolis-Kent Island Area of Chesapeake Bay" is being prepared for publication.

Geochemistry

The objectives of this investigation are: 1) to characterize water/sediment composition and to examine the variations in interstitial water chemistry as a function of sediment type and position along the salinity gradients of the Bay; 2) to interpret the reactions between the mineral components of the sediments and the interstitial waters which may control the concentration of dissolved species in the system; and 3) to determine the mechanisms and assess the extent of transfer of chemical species across the sediment-water interface.

Two research cruises, one in the Fall of 1978 and the other in the Spring of 1979, were conducted by the Geochemistry group. During the cruises, 100 gravity cores were collected and processed. The on-board procedure involved extraction of the pore waters in the nitrogen environment.

A special report entitled "Carbon and Sulfur Content of the Annapolis-Kent Island Area" is being prepared for publication.

Benthic Biology

The objective of this investigation is to describe and elucidate animal-sediment relationships of the Maryland portion of the Chesapeake Bay estuary.

Data for this study were also collected during the Fall and Spring research cruises. Box cores were taken at the same stations sampled by the Geochemistry group. Each box core was analysed for grain size, carbon-sulphur, and benthic organisms.

The information gathered will be presented on a map or graphical format indicating the biogenic and physical sedimentary structures and geochemical profiles that are relevant to the existing biota.

DIVISION OF ARCHEOLOGY

The archeology program is responsible for research in Maryland archeology, for coordinating professional and amateur archeological activities in the State, and for administering the permit system for archeological investigations on State lands, as provided in the Maryland Archeological Resources Act of 1968. The Division maintains a reference library, records on all known archeological sites and investigations in the State, and collections of historic and prehistoric artifacts from all sections of the

State. Its resources are available to the public, government agencies, and professional archeologists through publications, lectures, and open files.

Highway Studies involve document review and field reconnaissance for historic and prehistoric archeological remains in proposed highway rights-of-way. The project that began in 1975 with one part-time principal investigator, was expanded to a full-time position in 1977, and funds for a second full-time archeologist are approved for FY 80. Except for the State Archeologist's supervisory time, the project is fully funded by the State Highway Administration. During FY 79, studies and reports were completed for 15 highway projects in 11 counties and Baltimore City. Coordination with consultants was provided on a number of projects.

The Monocacy Region Study is gathering base-line data on the historic and prehistoric archeology of the Monocacy River area in Frederick and Carroll Counties. The object of the study is to develop a model to predict site locations that will prove useful to planners and cultural-resources managers in conserving our archeological heritage. Begun in January 1978 and scheduled for completion in October 1980, the project is largely funded by a Federal Heritage Conservation and Recreation Service (HCRS) grant-in-aid administered by the Maryland Historical Trust and by grants from the Commissioners of Frederick and Carroll Counties.

The South River Survey, initiated in FY 78 and completed during FY 79, was designed to provide more complete data for research and management of archeological resources in a rapidly developing portion of Anne Arundel County. Data in public and private collections and from field observations were compiled for 83 sites. The sites are described and interpreted in a comprehensive, illustrated report. The project was partly funded by an HCRS grant-in-aid administered by the Maryland Historical Trust.

The Upper Chester River Watershed Study, initiated and completed in FY 79, was carried out along streams to be dredged or impounded in Kent and Queen Anne's Counties. Numerous small, seasonal prehistoric Indian camps and a few sparse remains of late eighteenth and nineteenth century historic sites were recorded in an area for which no archeological information was previously available. The final report has been accepted by the U.S. Department of Agriculture, Soil Conservation Service, which funded the work.

Archeological Resource Management provides for assistance to the public, to government agencies, and to professional archeologists in evaluating project impact on archeological resources, in investigating threatened archeological sites, and in improving access to Division of Archeology resources and guidelines for archeological work in Maryland. The work is partly funded by HCRS grant-in-aid administered by the Maryland Historical Trust. During FY 79, field investigations were conducted at 15 locations in 9 counties, assistance was provided to the Department of State Planning in preparing archeological site data for computerization, a number of new sites were recorded as a result of field trips with private collectors, inventories were prepared of archeological sites subject to shoreline erosion, and a list of local informants/collectors was compiled.

Other management activities by the Division included drafting of guidelines for the Cave Protection Act passed by the General Assembly in 1978, representing the Department in connection with a non-Departmental bill (HB 1198) covering archeological costs in capital projects, reviewing numerous projects and reports submitted by private and government organizations, responding to general information queries, and advising the State Highway Administration and the Department of Natural Resources on proposed archeological investigations at Catocin Furnace in Cunningham Falls State Park. The number of archeological sites recorded in the Maryland Archeological Site Survey increased from 2,993 to 3,309 during FY 79.

The Advisory Committee on Archeology advises the Geological Survey on archeological matters. In its meeting on 25 April 1979, the Committee recommended that grants be obtained to develop educational exhibits, booklets, and films on Maryland archeology, and discussed the relationship between the archeological program of the Maryland Historical Trust and the Geological Survey.

The Division of Archeology maintains close liaison with the Archeological Society of Maryland, the Council for Maryland Archeology, and the Maryland Committee for Underwater Archeology. Staff members presented illustrated talks to several school, civil, and government groups. The State Archeologist continues to serve on the Governor's Consulting Committee for the National Register of Historic Places, the Scientific Council of the Maryland Academy of Sciences, and was re-appointed State representative on the Committee for Public Archeology of the Society of American Archeology.

ENERGY ADMINISTRATION

Budget	
General Funds	\$ 527,710
Special Funds	6,793,688
Federal Funds	1,870,894
TOTAL	\$9,192,292
Number of Staff	47

The Energy Administration's mission is to evaluate the production and conservation of energy while minimizing adverse environmental effects.

The three operating programs within the Administration are Power Plant Siting, Bureau of Mines, and the Maryland Energy Office.

The **POWER PLANT SITING PROGRAM** provides for strict enforcement of environmental controls but also imposes responsibility on the Program to help utilities to meet those standards. The law provides for:

- a. Consolidated decisions that incorporate inputs from all of the various economic, environment, health, and planning agencies into a single action of the Public Service Commission;
- b. A dependable fund source for the program by placing a small environmental charge on electricity produced within the state (currently 0.14 mills/Kwhr).

Activities are organized in four functional areas:

- a. The Assessment of the environmental impact of existing power plants.
- b. Prediction of the impact of future power plants at proposed sites. The program also conducts a detailed site investigation, including extensive field data collection, of all proposed power plant sites.
- c. Research is geared to developing an understanding of Maryland's environmental and socioeconomic structure.
- d. Site Acquisition to identify, investigate, acquire, and hold in the Site Bank, an inventory of sites suitable for the construction and operation of power plants.

The **BUREAU OF MINES** has two distinct areas of responsibility: 1) Environmental control of active mines and 2) restoration of abandoned mines.

Active Mines The Bureau evaluates mining plans for proposed deep and strip coal mines. Environmental controls are established and reclamation plans must be approved before the mining operation can begin. Active mines are monitored for compliance with the law and agreement with the approved plans.

Abandoned Mines Recent legislation makes possible the restoration of abandoned mines which for decades have presented serious environmental problems. Money collected from a surcharge on mined coal is used to repair the environmental damage caused by abandoned mines.

	FY 78	FY 79
Bureau of Mines		
Number of Active Mines	103	117
Tons Mined	2,806,290	2,650,000
Acres Permitted	3,466	1,026
Acres Reclaimed	888	1,104
Abandoned Mines Projects Started	5	13

During the year, the **MARYLAND ENERGY OFFICE** began full scale implementation of the State Energy Conservation Plan, funded under the *National Energy Policy and Conservation Act*. A State Energy Conservation Board was formed to assist in this effort.

The Office was instrumental in obtaining legislation providing energy conservation guidelines for new construction throughout the state and has sponsored a variety of training programs aimed at energy consumers in the residential, commercial, industrial, transportation and government areas. Eighty-five thousand seven hundred pieces of conservation literature were distributed during the year, 5,686 phone calls were serviced on the energy hot-line, over 2,000 persons attended extension service energy seminars on energy conservation, 10,000 copies of a Maryland Energy Conservation Guide for Agriculture were distributed and requests for this book have come from all over the nation. An additional 10,000 energy conservation guides for commercial and recreational boating, religious institutions, and multi-family dwellings were mailed.

The gasoline crises of 1979 caused an influx of over 100,000 telephone calls. Requests for additional allocations of gasoline numbered in the thousands.

The facilities and services of the Department of Natural Resources are available to all without regard to race, color, sex, age, religion, national origin, physical or mental disability.

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Maryland. Department of Natural Resour...
Annual activities report.

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Replacement
amendment of Chapter
title "Natural Resources", and to repeal and re-enact
Section 116, inclusive, of Article
2(a), 344(d), 344A, 346(a), 347 and 405
of the 1967 Edition of the Annotated Code, with amendments
to Sections 487, 488, 491, 498, 501, 506
of the same edition of said Code, title "Natural Resources",
and to repeal and re-enact with amendments
Section 55 of the same Article 96A of the Annotated
Code, 1964 Edition, "Mining", and to repeal and
re-enact with amendments Article 96A of the
Annotated Code of the same Article 96A,
1968 Edition, "General", to
new