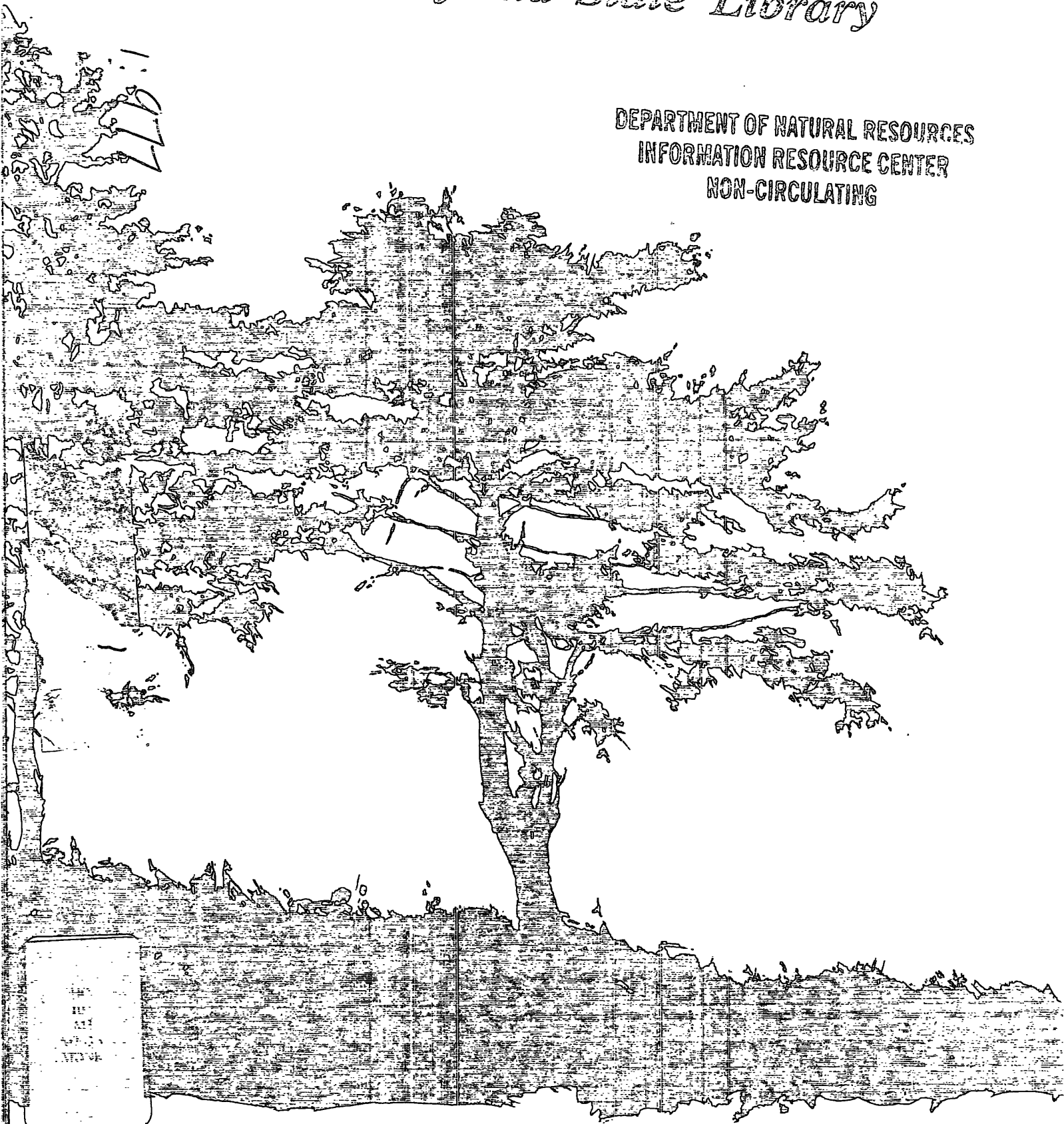


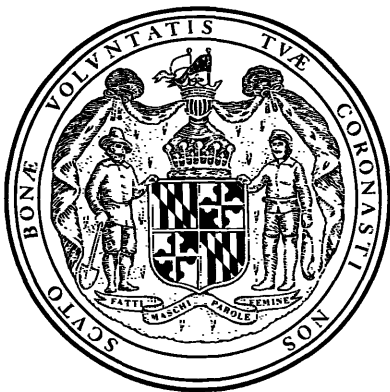
Maryland State Library

DEPARTMENT OF NATURAL RESOURCES
INFORMATION RESOURCE CENTER
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MARYLAND DEPARTMENT OF NATURAL RESOURCES
ANNUAL ACTIVITIES REPORT FISCAL YEAR 1977

**MARYLAND DEPARTMENT OF NATURAL RESOURCES
ANNUAL ACTIVITIES REPORT FISCAL YEAR 1977**



STATE OF MARYLAND

Blair Lee III, *Acting Governor* • Louis L. Goldstein, *Comptroller* • William S. James, *Treasurer*

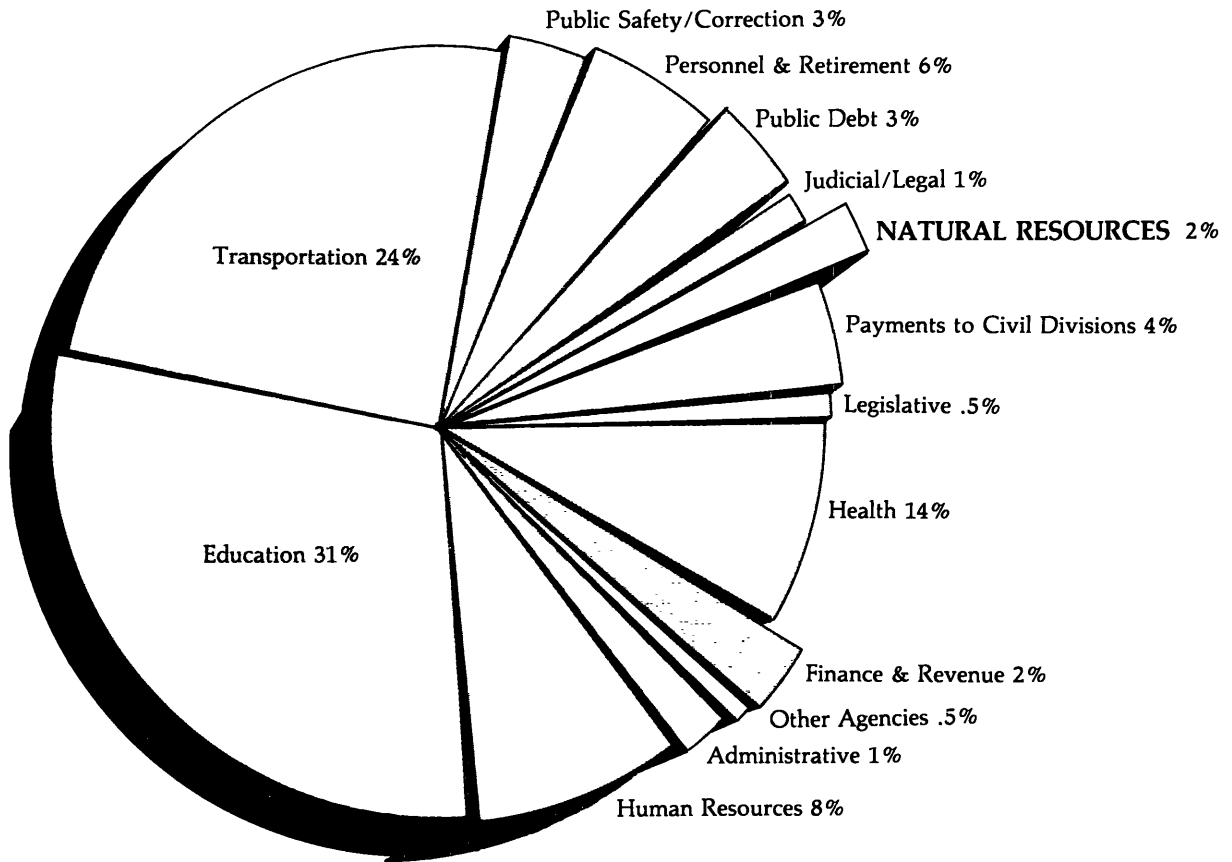
DEPARTMENT OF NATURAL RESOURCES

James B. Coulter, *Secretary* • Louis N. Phipps, Jr., *Deputy Secretary*

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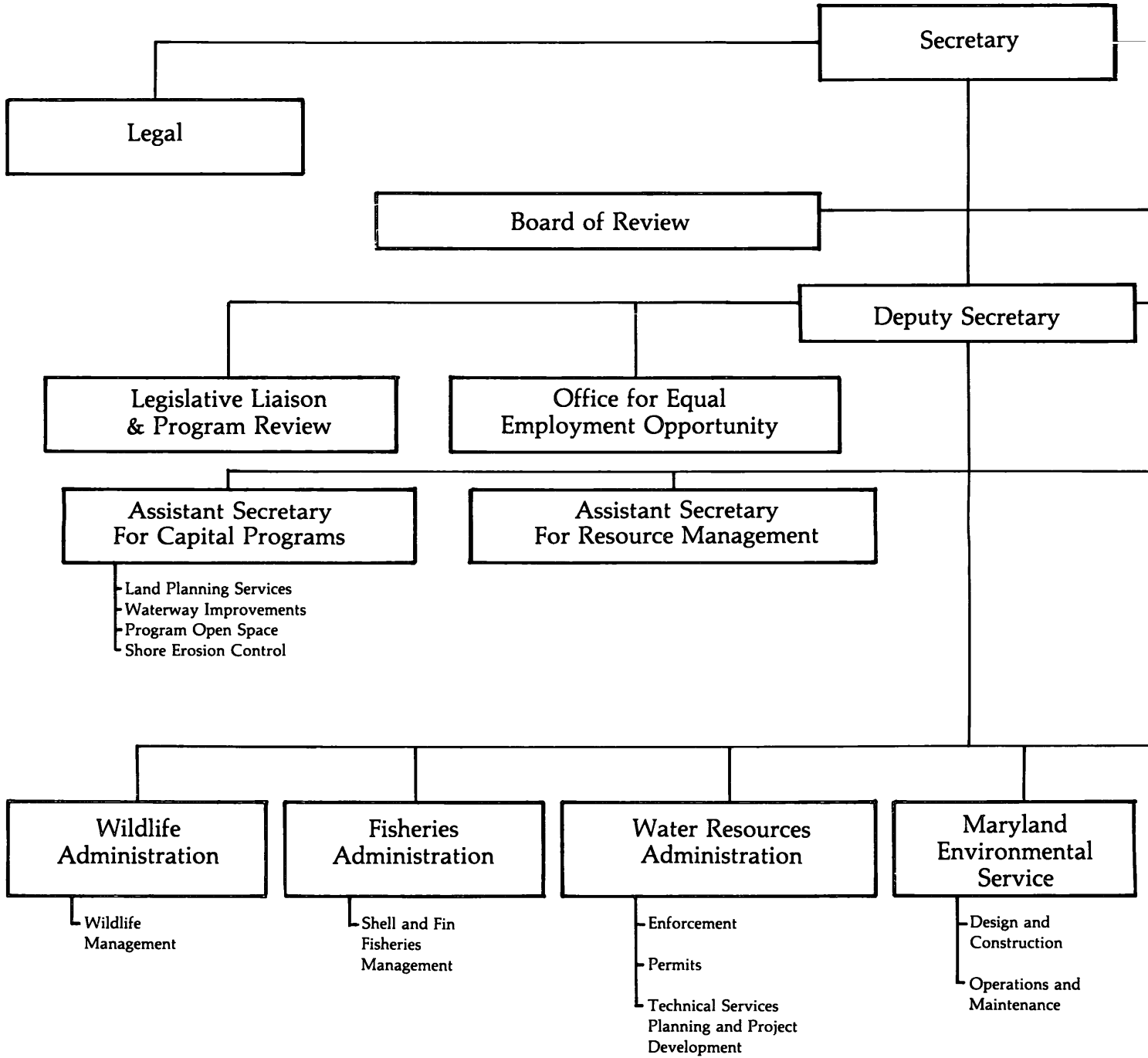
**STATE OF MARYLAND
OPERATING BUDGET**

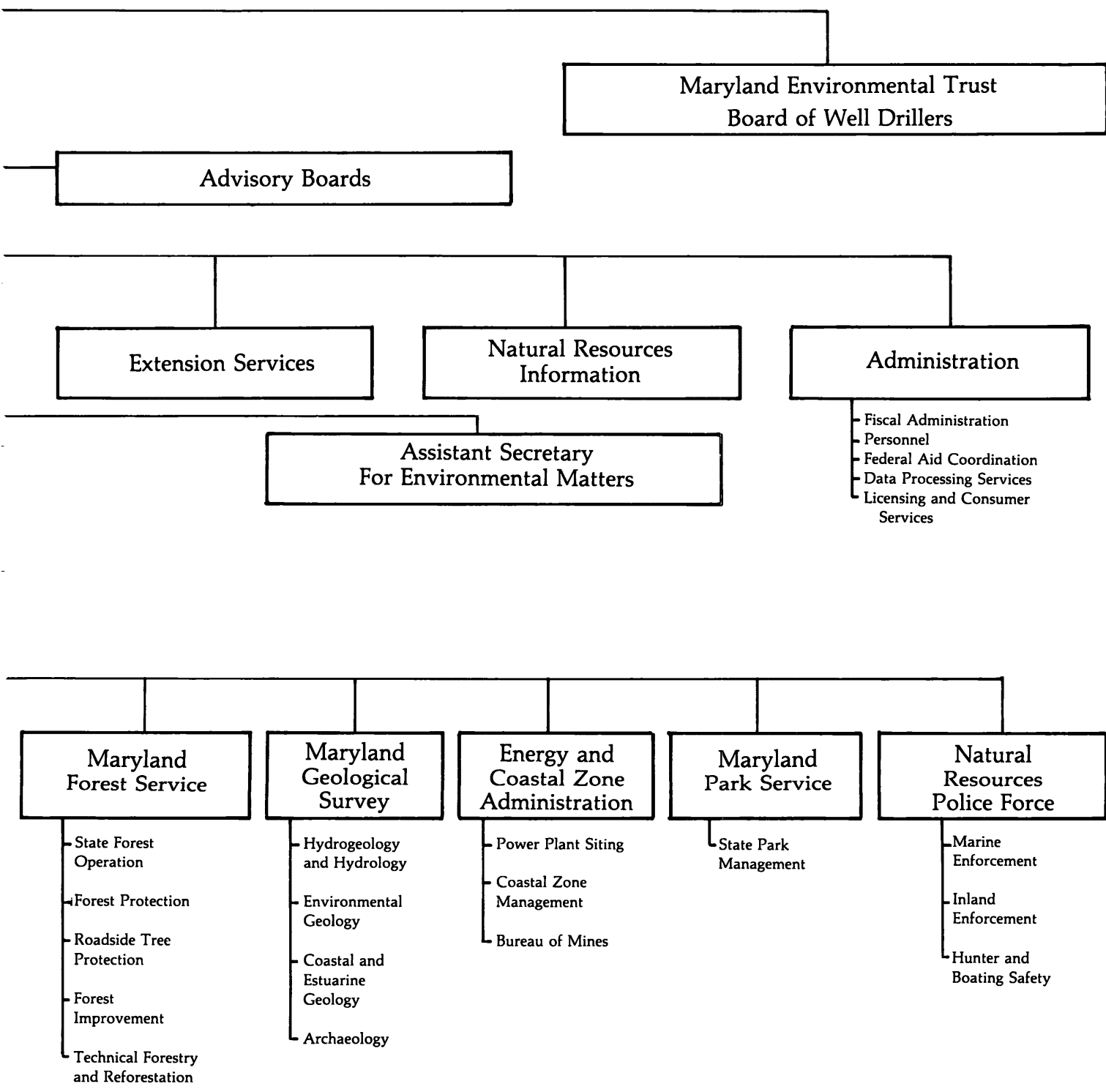


**DEPARTMENT OF NATURAL RESOURCES
OPERATING BUDGET**

Energy and Coastal Zone Administration	\$5,582,676
Capital Programs Administration	5,427,601
Maryland Park Service	5,399,567
Water Resources Administration	3,746,874
Office of the Secretary	3,666,007
Fisheries Administration	3,422,929
Maryland Forest Service	3,066,819
Maryland Environmental Service	2,293,712
Wildlife Administration	1,986,053
Natural Resources Police Force	1,463,760
Maryland Geological Survey	927,214
Maryland Environmental Trust	53,475

DEPARTMENT OF NATURAL RESOURCES
TABLE OF ORGANIZATION





OFFICE OF THE SECRETARY

The Secretary, the Deputy Secretary and three Assistant Secretaries of the Department of Natural Resources provide the establishment, coordination and direction of departmental policy. The Office of the Secretary is ultimately responsible for all aspects of resource management and environmental policy as planned and implemented by the agencies of the department. The Office of the Secretary maintains liaison with various legislative bodies, as well as communication with the public. The Office of the Secretary furnishes supporting services to all Department of Natural Resources agencies.

Office of the Secretary Budget	
General Funds	\$2,433,325
Special Funds	957,578
Federal Funds	138,893
Reimbursible Funds	136,211
TOTAL	\$3,666,007

GENERAL ADMINISTRATION

The General Administration program is responsible for the provision of administrative and related support services to all units, programs, projects and activities of the Department. Program activities involve five primary functions.

General Direction

This unit is responsible for guidance, supervision and coordination of program activities and for evaluating Department program performance for the purpose of instituting budgetary, procedural or administration changes.

Fiscal and Supportive Services Administration

This service is responsible for the budget and all fiscal transactions of the Department, and for central support. The Fiscal Services project serves the financial needs of the thirteen separate agencies within the Department of

Natural Resources. To accomplish this the project is further divided into four main sub-projects.

General Accounting Section. The General Accounting Section controls the annual budgetary appropriation granted each unit; authorizes the Comptroller to disburse funds as payment for its obligations; receives and allocates all revenue attained; maintains all fiscal records for each authorized Federal and State project; and provides fiscal information on the department's property and receivables.

Detailed fiscal records were maintained on 332 specific projects totaling \$25,117,000, as shown in Table 1.

Accounts receivable documentation was provided on 876 individual accounts in the total amount of \$1,326,857. Thirty-three of these accounts totaling \$1,132,167 were with the various Federal agencies.

The Department maintains fiscal information on the property purchased by the agencies totaling \$149,280,274.

**Table 1. Office of the Secretary
General Accounting Project Financing**

Fund	No. of Projects	Amount
Waterway Improvement Fund	57	\$ 2,512,000
Shore Erosion Loan Fund	58	1,080,000
General Construction Loan	11	2,542,000
Outdoor Recreation Land Loan	117	7,805,000
Federal Grants	89	11,178,000

Of this amount \$134,425,643 represents land and buildings and \$14,854,630 represents capital equipment.

Supportive Services Section. The Supportive Services Section controls real and personal property purchased or otherwise received by each unit within the department. As of June 30, 1977, the value of the land and buildings to which the department holds title exceeds \$134 million. Equipment inventory amounts to almost \$15 million. Included with the equipment are 245 sedans, 792 trucks, 435 boats and one airplane.

The Office of the Secretary oversees the operation of the departmental mail room. During the 1977 fiscal year, it handled approximately 1,500,000 pieces of mail and more than 9,800 parcels. Postage costs totaled more than \$113,000.

The Office of the Secretary operates two automotive facilities, servicing automotive equipment assigned to the various agencies. One facility is at Green Ridge in Allegany County and the other at the Hollofield Section of the Patapsco Valley State Park.

The Department of Natural Resources has more than 1,300 pieces of radio and raydist equipment distributed at various departmental locations throughout the state. This equipment must be tested, repaired and calibrated. More than \$11,000 was expended for repair parts during the 1977 fiscal year.

Auditing Section. The auditing section is sub-divided into three disciplines: 1) Internal Audit, 2) Seafood Dealer Audit, and 3) Boat Dealer Audit.

The *Internal Auditor* insures the accountability of all real and personal property generating to the department, inspects each regional work and service center for compliance with the applicable fire and safety codes, and audits individuals securing departmental licenses on a consignment basis. Approximately 289 facilities are owned and used by this Department. During the 1977 fiscal year 111 facilities were inspected and/or audited.

The *Seafood Dealer Auditor* examines the records of individuals and firms licensed to harvest, sell and/or pack seafood secured from the waters of this State or imported from out-of-State. The Seafood Audit team verified the records of 176 dealers. It is also responsible for verifying the records of harvestors who market their own catch. During the year thirty such individuals were visited.

The *Boat Dealer Auditor* audits the records of firms licensed to sell, ex-

change and/or consign pleasure boats to the general public. The Boat Dealer Auditor verified the records of 352 of the more than 400 dealers.

Wage and Hour Section. The Wage and Hour Section insures timely salary payments to department employees, maintains an accurate work and leave record for all employees and prepares the personnel section of the annual operating budget. The section also coordinates the retirement and the health and accident activities.

Personnel Administration

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

Personnel Administration Activities:

Transactions Processed 5120

- Appointments 1758
 - Permanent 156
 - Seasonal 1602
- Reclassification 603
- Promotions 113
- Position Actions 80
 - (Abolish/create; Transfer between units, program and departments; fund changes)
- Separations 1259
- Miscellaneous 1307
 - (Project, Name, Code, Fund, Class and Status Change; I.D. Requests; Exemption, Bonds, Address and Beneficiary Changes; EOD Inquiries; etc.)
- Reclassification Studies 85
- Desk Audits 20
- Specification Revised 19
- Suggestions Processed 11
 - Cash Awards 5
 - Pending 6
- Blood Program
 - Drives 2
 - Donators 145
 - Disbursement (units for 11 employees) ... 34
- Interview and Moving Expense Requests 16

- Examinations Requested 69
- Applicant Activity
 - Correspondence 820
 - Walk-ins 416
 - Interviews 186
 - Telephone Inquiries 1716
 - Employee Reviews 104
- Employee Grievances 15
 - (4th and 5th Step Hearings)
- Salary Surveys 4
 - Classes Involved 31
- Miscellaneous Campaigns 4
 - (CICHA-United Fund, I.D. Program, Deferred Compensation and Savings Bond) (Organize and Coordinate Presentations and other assistance)
- Legislation Reviewed 89
 - (Personnel Related)
- Special Projects
 1. Forest Service Classification Study
 2. Departmental Data Processing Course (25 employees)
 3. Program Chief Study
 4. Set-Up Department Identification Card Program
- Annual Salary Review
 - Requested New Classes 14
 - Salary Adjustments 12
 - Approved New Classes 7
- New Employee Orientations .. 5
 - (Tawes Building and 4 Regional Service Centers)
- Career Day Presentations 5

Data Processing Services

This service is responsible for the orderly development, integration and coordination of the data processing activities of the Department.

Office of Equal Employment Opportunity and Manpower

This office is responsible for coordinating the Department's affirmative action and State and Federal manpower programs. The Office of Equal Employment Opportunity and Manpower provides consultant service to the Department regarding the implementation of the *Affirmative Action Plan* as promulgated July of 1974.

Activities of the Office of EEO and Manpower include college recruitment, career day activities at high school and colleges; establishment of liaison with professional organizations as well as colleges and universities, locally and regionally. The Office is responsible for reviewing requests to fill all vacancies of the Department 30 days in advance of appointment.

Compliance: During the past year the Office has received and processed four formal complaints of discrimination. Disposition is pending. Eleven informal complaints of discrimination were resolved informally.

NATURAL RESOURCES INFORMATION

It is the responsibility of the Natural Resources Information Unit to report activities of the department to the public. It accomplished its mission during FY 77 on a budget of \$344,821 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, 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 and 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.

Two contractual employees are charged with operating a Dark Room for the Department, taking and printing good quality photographs for all agencies in DNR and producing quality spots for radio and TV and other audio-visual aids.

Maryland Conservationist

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

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 the 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.

Library

Duties of the library staff include: cataloguing all books and periodicals received by DNR, maintaining the film library for Natural Resources Information, mailing films on a loan basis to schools and clubs, editing and repairing films on their return, assisting the public and DNR employees in locating information, writing an in-house library newsletter, *Library Notes*, listing new arrivals and acquisition and services provided by the library.

Graphic Services

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

EXTENSION SERVICE

The Extension Service is a staff function of the Office of the Secretary with a total budget of \$270,762.

The Extension Service supports the Office of the Secretary and the policies he may issue to the public and within the Department. The Service is charged with the dissemination of these policies and with the gathering of public reaction to the activities of the Department. The Service maintains a working knowledge of all natural resources management and planning activities within the State. It has the responsibility of providing advisory services, assistance and the dissemination of knowledge to the public concerning the best use and management of Maryland's natural resources. The Extension Service acts as an ombudsman between the public and the Department.

The Director serves as the liaison office for the *Secretary's Advisory Board*, and the *Boat Act Advisory Committee*. He is a member of the board of *Chesapeake Appreciation Days Inc.* and serves as the Department's interface to several other groups and organizations.

Regional Service

The backbone of the Extension Service is formed by four Regional Extension Service Specialists stationed in Cumberland, Laurel, Bel Air and Salisbury, Maryland. To further the policies of the Secretary, to gather information for the Secretary, and to support the various agencies, Extension Service Specialists attend hundreds of meetings each year, deliver scores of talks to groups and drive an average of 25,000 miles each year to accomplish their mission.

These four regional Extension Service Specialists determine potential problems and so advise the Secretary by a direct reporting system through the director. They must provide expeditious answers to the public from the Department and serve as ombudsmen between the public and the Department of Natural Resources.

Office of Recreation and Leisure Services

The Office of Recreation and Leisure Services is administered by the Extension Service. This unit, approved by the 1974 General Assembly, provides technical assistance to other state units, counties, municipalities, organizations and individuals in planning and organizing recreational departments, facilities and programs. A resource library is maintained to provide research material for interested parties. In addition, a state-wide personnel referral program is offered to match recreation professionals with existing vacant positions available throughout the State. Two state-wide surveys, a newsletter and a legislative brochure were produced this year. A summary of activities for the previous year includes:

• Conferences and workshops attended	16
• Educational displays	7
• Guest lectures	8
• Field visits	72
• Office visits (by others)	42
• Personnel referrals processed	88
• Correspondence handled: incoming	664
outgoing	1175

Boating Liaison

The Extension Service 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 hundreds of individuals. Seventy lectures and speeches, 95 meetings and 3 boat shows were attended. The *Guide for Cruising Maryland Waters* is published by the Boating Liaison office.

Save Our Streams

The Extension Service directs the Save Our Streams Program which, with the support of the Izaak Walton League, obtains sponsors from local community groups to adopt and clean up streams in their immediate areas. Over 20 streams throughout the State are monitored under this program, and several major clean up programs were accomplished this year.

Commercial Fisheries Liaison

Commercial Fisheries maintains liaison with the commercial fisheries industry in Maryland. This involves coordination with the *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.

Motion Pictures

The Extension Service is responsible for the production of motion pictures and slide presentations. Two to three color motion pictures of high quality concerning one or more of the Department's agencies are produced each year. The latest film was made to explain the functions of the Department of Natural Resources police.

**LICENSING AND
CONSUMER SERVICES**

Licensing and Consumer Services is responsible for administration of the *State Boat Act*, with regard to titling and registering boats; and for the recordation of security interests in vessels, and the administration of the licensing and permit requirements of Natural Resources Article. This section is responsible for the sale of Department publications.

The seven locations within the Licensing and Consumer Services program responded to 777,060 persons requesting conservation, preservation or recreation licenses during FY 77 and collected \$4,467,004 in fees and \$4,436,584 in resource and title taxes. It collected \$17,018 in oyster ground rents.

This unit provided liaison and fiscal control for:

- 512 boat dealers
- 22 hunting and anglers license distributors
- 50 consignment agents
- 800 sales agents
- 216 oyster dealers and buyers and packers
- 25 clam dealers
- 167 crab packers and shippers
- 17 seafood dealers
- 24 Clerks of Court

Personnel in the Annapolis office and regional service centers distributed over 1,000,000 informational pamphlets and sold 18,795 publications dealing with Natural Resources. Receipts from the special funds collected were utilized to support special activities in certain operating units of DNR.

In FY 77 the clerical support and office space provided to DNR was expanded to include support of the regional hunter safety project leaders in each regional service center, now in six locations throughout the State.

BOARD OF WELL DRILLERS

The Maryland State Board of Well Drillers examines and licenses persons engaged in the business of well drilling. This includes actual well construction and the installation of pumps and water conditioning equipment. Persons applying for licenses are given written examinations and, when required, field examinations to determine their proficiency in the various aspects of well drilling.

The Board has established an apprenticeship program to help assure that there will be sufficient numbers of properly trained people entering the business of well drilling.

The activities of the Board are summarized as follows:

Activity (Licenses)	Total for FY 77
Master Well Driller	174
Journeyman Well Driller ..	87
Apprentice Well Driller ...	20
Well Driver	25
Pump Installer	39
Water Conditioning Installer	27
Temporary	6

**ASSISTANT SECRETARY FOR
ENVIRONMENTAL MATTERS**

The Assistant Secretary for Environmental matters represents the Department in a number of major activities, including membership or as an officer of interstate commissions, regional councils, and national associations dealing with water resources and environmental concerns. He is a member of the *Susquehanna River Basin Commission*, the *Interstate Commission on the Potomac River Basin*, the *Potomac River Basin Advisory Committee*, and the *Ohio River Basin Commission*; an executive officer of the *Interstate Conference on Water Problems*; Vice-Chairman of the *Southern Environmental Resources Conference*; the Governor's representative on the *National Governors' Association's Subcommittee on Water Management*, dealing with issues of national water policy, federal water

pollution control programs, safe drinking water, etc. As the appointed alternate to the Governor on the *Susquehanna River Basin Commission*, the Assistant Secretary has hosted fall meetings of the Commission in Maryland, held most recently in Baltimore with a guided tour of Baltimore Harbor and the Chesapeake Bay Hydraulic Model.

The Assistant Secretary coordinates Departmental review of all projects assessed for environmental impact pursuant to *U.S. Office of Management and Budget (OMB) Circular A-95*. He supervises State Clearinghouse responses representing the Departmental position on projects reflecting agency plans, programs and objectives. During the 1977 fiscal year, 513 Clearinghouse project reviews were completed, including 39 environmental impact statements, 124 water treatment facilities designs, and 17 comprehensive plans.

**ASSISTANT SECRETARY
FOR RESOURCE MANAGEMENT**

The Assistant Secretary for Resource Management serves as Executive Secretary to the *Board of Review* and as departmental liaison to the *State Departments of Transportation, Economic and Community Development, Planning, Education* and the *Regional Planning Council*.

During the year, the board of review met 9 times; 6 meetings were held in Annapolis, two in Cecil County and one in Dorchester County. Five contested cases were heard and opinions rendered.

**ASSISTANT SECRETARY
FOR CAPITAL PROGRAMS**

The Assistant Secretary for Capital Programs coordinates the activities of the *Capital Programs Administration*.

CAPITAL PROGRAMS ADMINISTRATION

This Administration includes four programs — Land Planning Services, Program Open Space, Shore Erosion Control and Waterway Improvements. Under the leadership of the assistant secretary and four 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; and develops Waterway Improvements for the benefit of the general boating public and for general waterway maintenance.

**Capital Programs
Administration
Budget**

General Funds	\$1,238,632
Special Funds	3,813,544
Federal Funds	375,525
TOTAL	\$5,427,601

LAND PLANNING SERVICES

This program is responsible for the planning related to the acquisition and development of lands administered by the Department of Natural Resources. The major responsibilities include park master planning, DNR lands system planning, implementation of the *Wild and Scenic Rivers Act*, acquisition mapping, and performing environmental evaluations.

Two master plans were completed in FY 77 and 3 are now in progress. One concept plan was completed and 4 are in process. Fifteen master plan background studies were completed. Two advisory committees were established, making 12 committees in process in FY 78. The staff conducted 119 public meetings and presentations.

PROGRAM OPEN SPACE

This program is currently administering 49 active Federal projects, 11 of which, amounting to \$7,330,037 were submitted to the Bureau of Outdoor Recreation during FY 77. Eight of the 11 have been approved by the Bureau; the other three are pending approval. Nine additional Federal projects, valued at \$4,550,000, will be submitted during FY 78. State Open Space grants approved by the Board of Public Works during FY 77 amounted to \$8,333,099.

Land & Property Acquisition

During FY 77, this program coor-

inated and was actively involved in adding an additional 4,987 acres to the Department of Natural Resources' land system.

State Parks	2,193 acres
State Forests	264 acres
Natural Environment Areas	919 acres
Natural Resources Management Areas	57 acres
Wildlife Management Areas	1,563 acres

Currently under option, but not settled, are an additional 4,374 acres for FY 77 and 2,499 acres under option prior to FY 77. Three hundred and two acres were approved for condemnation in FY 77 and not settled, and 6,501 acres were approved for condemnation prior to FY 77 and are not settled. Funds available for additional acquisitions from the Program Open Space fund are \$16,022,000; \$6,750,000 of that became available in FY 78.

Land & Property Development

This program is currently coordinating the design of 12 jobs started prior to FY 77, the construction value of which is \$4,565,000. Twelve additional jobs having a construction value of \$1,871,000 were started during FY 77. Ten design jobs were completed during FY 77 and their construction value is \$7,699,000. Seven additional jobs now being prepared by the Land & Property staff have an estimated construction value of \$2,940,000. Two

additional design programs with a construction value estimated to be \$350,000 have been submitted to the Department of General Services and are awaiting the appointment of consultants. Three completed design jobs are awaiting appropriation of construction money totalling \$4,000,000 to be requested in the General Construction Loan for 1978. Six jobs underway are valued at \$2,301,000 and are over 75% complete. Twelve construction jobs with a value of \$4,323,000 were started in FY 77. During FY 77, 15 construction jobs valued at \$5,960,000 were completed.

**Land & Property
(Leases, Right-of-Way and Easements)**

This program handled 425 leases of land and improvements administered by the Department of Natural Resources. Revenues received from these facilities increased by \$105,211.43 during FY 77. Total receipts for FY 77 amounted to \$398,930. A number of factors contributed to this net increase: (1) increased acreage and improvements available for rental through additional acquisitions, and (2) re-evaluation of rents for land and

improvements which resulted from the program staff completing a very detailed analysis of current rental values. This revenue should experience an additional net increase during FY 78 as rents for land and improvements are being further adjusted due to the study. In the area of rights-of-way and easements, current receipts are \$3,773 per year. In addition, \$1,000 was received during FY 77 as an administrative fee for handling rights-of-way requests.

A summary of Program Open Space allocations is given in Table 2.

**Table 2. Program Open Space Local Share Summary Report
As of July 31, 1977**

County	Total Allocation	50% Amount Allocated	50% Amount Encumbered by BPW	Unencumbered Balance	50% Amount Allocated	50% Amount Encumbered by BPW	Unencumbered Balance	Unencumbered Balance
Allegany	1,099,655.	549,827.	439,624.	110,202.	549,827.	562,692.	(12,864.)	97,338.
Anne Arundel	8,922,993.	4,461,496.	2,963,431.	1,498,065.	4,461,496.	3,476,444.	985,052.	2,483,117.
Baltimore	12,911,587.	6,455,793.	4,753,525.	1,702,267.	6,455,793.	6,108,814.	346,979.	2,049,247.
Calvert	552,636.	276,318.	266,140.	10,177.	276,318.	241,375.	34,943.	45,120.
Caroline	271,422.	135,711.	58,867.	76,844.	135,711.	104,498.	31,212.	108,056.
Carroll	1,637,905.	818,952.	578,964.	239,988.	818,952.	730,094.	88,858.	328,846.
Cecil	1,057,535.	528,767.	493,095.	35,672.	528,767.	477,221.	51,545.	87,218.
Charles	1,610,505.	805,252.	616,377.	188,874.	805,252.	676,505.	128,746.	317,621.
Dorchester	439,120.	219,560.	189,587.	29,972.	219,560.	192,190.	27,369.	57,341.
Frederick	2,104,523.	1,052,261.	770,983.	281,278.	1,052,261.	888,067.	164,194.	445,472.
Garrett	354,243.	177,121.	33,300.	143,821.	177,121.	131,114.	46,006.	189,828.
Harford	3,357,840.	1,678,920.	1,089,962.	588,957.	1,678,920.	1,310,712.	368,207.	957,164.
Howard	3,987,234.	1,993,617.	1,726,385.	267,231.	1,993,617.	1,394,910.	598,706.	865,938.
Kent	287,397.	143,698.	126,914.	16,783.	143,698.	152,807.	(9,108.)	7,675.
Montgomery	15,571,565.	7,785,782.	7,623,532.	162,250.	7,785,782.	6,409,561.	1,376,220.	1,538,470.
Prince George's	16,631,357.	8,315,678.	7,049,958.	1,265,720.	8,315,678.	7,319,678.	996,000.	2,261,720.
Queen Anne's	389,592.	194,796.	163,252.	31,543.	194,796.	147,624.	47,171.	78,715.
St. Mary's	1,009,576.	504,788.	126,817.	377,970.	504,788.	436,803.	67,985.	445,955.
Somerset	256,051.	128,025.	95,898.	32,127.	128,025.	112,583.	15,442.	47,569.
Talbot	538,791.	269,395.	267,629.	1,766.	269,395.	242,722.	26,672.	28,439.
Washington	1,794,320.	897,160.	628,345.	268,814.	897,160.	1,008,034.	(110,874.)	157,939.
Wicomico	991,710.	495,855.	344,289.	151,565.	495,855.	434,001.	61,853.	213,419.
Worcester	1,149,997.	574,998.	289,852.	285,146.	574,998.	512,228.	62,769.	347,916.
Baltimore City	9,872,446.	4,936,223.	4,936,223.	0	4,936,223.	4,284,260.	651,962.	651,962.
TOTAL	86,800,000.	43,400,000.	35,632,958.	7,767,041.	43,400,000.	37,354,945.	6,045,054.	13,812,095.
Baltimore City Direct Grants	8,600,000.	4,300,000.	4,300,000.	0	4,300,000.	3,471,007.	828,992.	828,992.
GRAND TOTAL	95,400,000.	47,700,000.	39,932,958.	7,767,041.	47,700,000.	40,825,953.	6,874,046.	14,641,087.

SHORE EROSION CONTROL

The Shore Erosion Control Program is responsible for providing technical and financial assistance, through the Shore Erosion Control Construction Loan Fund, to property owners for control of shore erosion problems in the Chesapeake Bay and tributaries.

The Shore Erosion Control staff completed 38 projects amounting to \$1,196,467.77 for 49 property owners. Sixteen projects, totalling \$435,938.71, are under construction, with two projects totalling \$88,045 awaiting construction. Projects between bid and contract amount to \$267,220 for eight projects. Six projects are scheduled for bid and total \$297,100. Fifty-five projects are under design amounting to \$2,216,000.

WATERWAY IMPROVEMENT

Hydrographic Operations

Hydrographic Operations installed and maintained 438 regulatory buoys, 39 navigational buoys, and 137 day-beacons (fixed navigational aids). Seven areas were surveyed for reclassification to clam bars. Ninety-two ice breaking projects were completed, with several escort assists to Tangier Island in Virginia waters. This section surveyed 136 shellfish planting areas covering 681 acres for oyster seed, 1,146 acres of oyster dredged shells and 213 acres of fresh oyster shells. The acres planted are approximate and the number of acres is to be increased to accommodate additional fresh oyster shells yet to be planted. Nine hundred fifty-two acres of leased ground were resurveyed.

Dredging Operations

The Dredging Operations section completed six projects valued at \$356,085, consisting of dredging of channels and harbors and constructing jetties and breakwaters.

Waterway Grants

Waterway Grants completed 25% of the construction of the second Regional Boating Center, at Point Lookout State Park, and completed 50 projects consisting of facility improvements, launching ramps, bulkheading and piers, valued at \$771,878. Fifty-five new projects were approved. The section monitored 125 projects valued at \$6,300,000 in various stages of development.

Marine Service Operations

Marine Service Operations personnel removed 283 derelict vessels and debris from Bay waters and tributaries. Three hundred fifty-three boat hours (706 staff hours) were spent in ice breaking projects. The section also completed three dredging projects in various tributaries.

WATER RESOURCES ADMINISTRATION

This Administration is responsible for the protection, enhancement and management of the water resources of the state. Through permitting and enforcement of the laws and regulations, the Water Resources Administration seeks to insure the quality and quantity of the waters of the state for all legitimate uses. The Water Resources Administration Technical Services program includes Laboratory, Water Quality, Flood Control and Planning Services.

Water Resources Administration Budget

General Funds	\$2,381,080
Special Funds	458,838
Federal Funds	906,956
TOTAL	\$3,746,874

GENERAL DIRECTION

This activity is responsible for the overall direction, supervision and coordination of activities within the Administration.

Clearinghouse projects reviewed numbered 494 in FY 77.

ENFORCEMENT

This program is responsible for the administration of the Agency's enforcement of oil control activities; for the inspection and enforcement activities of the Water Resources Administration and the Bureau of Mines under the authorization of the *Natural Resources Articles 7, 8 and 9* and subsequent regulations adopted. Specific program activities and related workloads are summarized in the accompanying Table 3. (following page)

The Enforcement Program is organized into five field regions: Western Maryland, Central Maryland, Northeast Maryland, Southern Maryland, and Eastern Maryland. Program personnel conduct periodic and unscheduled surveillance by ground and air. Enforcement actions, either administrative or legal, are based on nature, extent and impact of the violations. Primary emphasis is given to direct "in the field" corrective action. A 24-hour duty roster is maintained through the Department of Natural Resources Police radio watch to handle emergency water pollution problems.

Oil Control

The Oil Control Section, as part of the Enforcement Program, 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 related follow-up field enforcement work. The Section is supported by the Maryland Oil Disaster Containment, Clean-up and Contingency Fund, maintained by license fees charged for oil storage facilities over 3,000 barrels.

A summary of Oil Control activities appears in Table 4. (following page)

Table 3. Water Resources Administration

Activities of Enforcement Section	1976	1977
Inspections for Non-Permitted Points of Discharge or Pollution Sources	3,904	2,869
Inspections for State Discharge Permits	4,024	5,175
Inspections for Oil Terminal Facility Licenses ...	265	306
Inspections for Oil Operations Permits	1,979	2,666
Inspections for Toxic Materials Permits	4	22
Inspections for Waterway Permits	2,294	2,584
Inspections for Appropriations Permits	116	218
Inspections for Small Pond Permits	192	148
Inspections for Surface Mining Permits and Licenses		824
Inspections for Well Permits and Construction ...	714	737
Inspections for State Wetlands Licenses/Permits	2,776	3,266
Inspections for State Sediment Control	1,606	1,463
Other Inspections (Long Range Monitoring and Local Problems)	436	362
Other Miscellaneous	1,747	2,135
TOTAL	20,057	22,775
Complaints Received and Administered	850	1,057
Enforcement Actions (Administrative and Legal)	867	963
Mine Rescue and First Aid Days	36	26

Table 4. Water Resources Administration

FY 77 Activities of Oil Control Section	1976	1977
Oil Operations Permits	1,152	689
Oil Terminal Facility Licenses	143	147
Oil Vehicle Operator's Certificates	822	1,864

Table 5. Water Resources Administration

Wetlands Permits and Approvals	1976	1977
Board of Public Works Licenses	419	413
Department of Natural Resources Permits	22	12
Department of Natural Resources Approvals	21	26
Water Quality Certificates	454	379
Water Quality Review, Less Certificates	1,136	313
Advisory Services, Specific Projects	110	273
Federal and Other Reviews	20	374
TOTAL	2,182	1,790

PERMITS

This program is responsible for the issuance of all permits, certifications, and approvals pursuant to Water Resources Law and Regulations, and is divided into six major projects: General Administration, Wetlands, Hazardous and Industrial Wastes, Municipal and Agricultural Discharges, Water Supply and Watershed.

General Administration

This is a newly-established project, and is responsible for the coordination of the activities of the five sections within the Permits Division.

Wetlands

This section is responsible for the issuance of:

1. wetlands permits and approvals for the regulation of dredging and filling in private wetlands;
2. making recommendations to the Board of Public Works on issuance of a wetlands license for similar type works in State wetlands;
3. issuance of certifications to Federal agencies on the impact of water quality on 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 in these activities involve site inspections, evaluations and public hearings.

In addition, the program provides advisory service to prospective applicants on modifications, and/or alternatives in order to minimize the adverse effects on the environment.

This section is also responsible for the development of a State program to manage dredging and spoil disposal activities in Maryland's waters, to monitor such activities, and to investigate alternate and beneficial uses of dredged spoil.

Table 5 outlines the activities of the Wetlands Permits Section.

Hazardous and Industrial Wastes

This Section has primary responsibility for issuing and re-evaluating State and National Pollutant Discharge Elimination System permits to industrial and commercial facilities, as well as implementation of the Hazardous Substances Control Program. This program includes permitting of facilities for disposal of hazardous wastes, certification and licensing of haulers, a waste manifest system and management of the Hazardous Substances Control Fund, a special fund receiving money from permit fees and other assessments levied on permit holders. Other duties and responsibilities in the Section include:

1. reviewing and commenting on compliance plans submitted in accordance with issued discharge permits as well as orders issued by the Administration's Enforcement Division;
2. issuing certificates 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 to enable applicants to obtain loans for pollution control purposes;
4. issuing permits for use of toxic materials for aquatic life management purposes; and
5. evaluating the effects of discharges on receiving streams and evaluating various treatment technologies or process modification and the degree of pollutant reduction attainable by their implementation

Activities of this Section are shown in Table 6.

Municipal and Agricultural Discharges

This Section is responsible for regulating the discharge and disposal of municipal and agricultural waste and wastewater, conducting the following activities:

1. Issuance of State and National Pollutant Discharge Elimination System discharge permits for municipal and agricultural point source wastewater discharges to surface waters,
2. Technical evaluations of the effect of wastewater discharges on receiving waters,

Activities FY 77	1976	1977
Discharge Permits	170	184
Permit Modifications	10	83
Toxic Materials Permits	77	97
Compliance Plan Reviews	71	194
*Hazardous Substance Hauler Certificates		37
**Tax Amortization Certification	2	
SBA Need and Adequacy Statements	2	
TOTAL	332	596
*Program authorized effective July 1, 1976		
**Program terminated effective July 1, 1976		

Activities FY 77	1976	1977
Discharge Permits	76	70
Facility Plan Discharge Determinations	3	90
Agricultural Approvals	25	50
Permit Modifications	4	48
Compliance Plan Reviews	3	5
TOTAL	111	263

3. Technical determinations of the environmental effects of wastewater discharge alternatives, including land disposal, mandated under Section 201, *Federal Water Pollution Control Act*, as amended, 1972,
4. Issuance of State discharge permits for municipal and agricultural related wastewater discharges to the land,
5. Granting of State approvals to agricultural waste and wastewater disposal operations in accordance with the Administration's agricultural discharge policy,
6. Review and evaluation of requests for

- significant modifications to State and National Pollutant Discharge Elimination System discharge permits,
7. Review of compliance plans pursuant to orders from the Administration's Enforcement Division,
8. Review and comment on State Clearinghouse projects related to sewage treatment and collection systems, and
9. Review and evaluation of pre-treatment ordinances required by the National Pollutant Discharge Elimination System permits.

Table 7 summarizes the year's activities of this section.

Water Supply

This Section is responsible for water supply planning as well as for the issuance of two types of permits:

1. Well Construction and
2. Water Appropriation and Use Permits, including groundwater and surface water. Issuance of these permits involves a technical evaluation of the environmental impact of well drilling activities and withdrawals of underground and surface water. Responsibilities include: the recordation and evaluation of water rights, groundwater and surface water use and quality data and other hydrogeologic data from wells and hydrologic data from streams, and triennial review of groundwater and surface water appropriations, preparation of groundwater and surface water permits, holding of public hearings and formulation of a Statewide Water Supply Program.

Water Supply Permits Section actions are shown in the accompanying Table 8.

Watershed

This Section is responsible for the issuance of eight types of permits:

- Small Ponds
- Waterway Constructions
- Waterway Obstructions
- Temporary Waterway Constructions
- Erosion and Sediment Controls
- Maintenance and Repairs
- Surface Mining Licenses
- Surface Mining Permits

The Section makes site inspections, conducts technical evaluation and/or review of proposed projects and holds public hearings. In addition, advisory service is provided to prospective applicants on measures and alternatives to proposed works which will minimize the adverse affects on the environment.

Table 9 provides a listing of the FY 77 actions of this Section.

**Table 8. Water Resources Administration
Water Supply Permits Section**

Activities FY 77	1976	1977
Well Permits Issued	13,353	14,160
Appropriation Permits Issued		
Groundwater	285	648
Surface Water	45	61
Water and Sewer Plan Reviews	14	24
Triennial Reviews		
Groundwater	100	160
Surface Water	12	30
TOTAL	13,809	15,083

**Table 9. Water Resources Administration
Watershed Permits Section**

Activities FY 77	1976	1977
Small Ponds	2	3
Waterway Obstructions	8	4
Waterway Constructions	136	201
Temporary Waterway Constructions	19	91
Maintenance and Repairs	107	104
Erosion and Sediment Controls	139	147
Surface Mining Licenses	49	130
Surface Mining Permits		63
Other Reviews	111	308
TOTAL	571	1,051

TECHNICAL SERVICES

This program is responsible for providing technical support for State water quality programs, encompassing four primary work projects:

- Laboratory Services
- Water Quality Services
- Flood Control
- Planning

Laboratory Services

The Laboratory Services Section performs chemical, physical and bacteriological analyses of water, wastewater, sediments, and aquatic life for the programs of the Water Resources Administration and other agencies within the Department of Natural Resources. 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" and on mobile trailers.

Laboratory Analyses activity is shown in Table 10.

Water Quality Services

The Water Quality Services Section is responsible for technical support services including surveys and investigations to determine cause and effect relationships on water quality. Included in this effort are studies to identify and quantify the chemical, physical, biological and hydrological characteristics, to assess current conditions and to determine needs and justification for water quality control. Other activities within the section include on-site monitoring, aerial surveying, and identification of agricultural drainage and mine pollution effects. Close coordination of this activity area is maintained with the Enforcement, Permit and Planning Programs of the Water Resources Administration. Also, coordination of this activity area is maintained with the Maryland Environmental Service as well as the *Federal Environmental Protection Agency*.

Water Quality Services functions in two major areas: State-wide Trend Sampling and geographically selected Intensive Studies. The *State-wide Trend Sampling* is designed to provide data for evaluating water quality changes over both the short and long term. The *Intensive Studies*, programmed to cover the State's waters during each five-year period, concentrate on determining the effect of alternate wastewater management methods on the water quality of the State's water; determining the effectiveness of pollution control facilities; and determining the causes for and extent of water quality problems in general.

Table 11 shows the types of surveys performed by the Water Quality Services Section.

Flood Control

The Flood Control Section has major responsibility for the ad-

ministration of the *Flood Hazard Management Act* (Chapter 691, Laws of Maryland, 1976), as well as for the coordination and promotion of the National Flood Insurance Program.

The *Flood Hazard Management Act* was initially implemented in FY 77. Basic studies are to be conducted for the Mattawoman, Sawmill Branch, Gwynns Falls and Patapsco. One hundred five communities in Maryland participate in the National Flood Insurance Program, coordinated by the Water Resources Administration Flood Control Section.

The Flood Control Section coordinates its efforts with Federal and local agencies performing similar studies. These agencies include the Coastal Zone Management Program, the *U.S. Soil Conservation Service*, the *U.S. Corps of Engineers' Floodplain Information Program* and the *Federal Insurance Administration of HUD*.

**Table 10. Water Resources Administration
Laboratory Services**

Type of Analyses Performed	1976	1977
Chemical	98,409	112,221
Bacteriological	4,589	4,612
TOTAL	102,998	116,833

Table 11. Water Resources Administration

Type of Surveys Performed	1976	1977
Physical/Chemical/Bacteriological State-wide Trend Sampling (visits)	759	1,804
Biological State-wide Trend Sampling	130	190
River Basin Intensive Week-long Surveys (Physical/Chemical/ Bacteriological/ Biological)	15	16
TOTAL	904	2,010

Planning

The Planning Section is responsible for implementing the water quality management provisions of PL92-500, the *Federal Water Pollution Control Act*, and is the lead unit for the implementation of the *Resource Conservation and Recovery Act of 1976* (PL94-580).

The Water Quality Management Planning Program is responsible for developing and implementing Water Quality Management Plans pursuant to PL92-500. These documents are to be developed in two phases and the first phase is the 303(e) basin plans which emphasize information and recommended controls on point source pollution. The second phase plans address non-point sources and controls on them. They also specify management agencies for implementing projects and management practices and other activities as needed to meet State and Federal water quality requirements.

To date, 16 of 18 Phase I water quality management plans have received State certification and 2 of these, the Potomac-Washington Metropolitan Area Basin Plan and the Elk Basin Plan, have been approved by the *Federal Environmental Protection Agency*.

The staff is responsible for coordinating and finalizing the implementation of the Phase I water quality management plans. With regard to publicly owned sewage treatment systems, the staff reviews and provides appropriate comments on 201 facility plans, county comprehensive water and sewer plans, and State Clearinghouse projects. The unit participates in the State's sewage construction grant program and provides an annual review of water quality and project effectiveness for use in the preparation of the State's construction grants priority list.

Highlights for FY 77 include:

1. 14 Phase I Water Quality Management Plans were completed; public hearings held, appropriate revisions made, and plans were adopted by the State.
2. The State's 305 (b) Water Quality Report "76" update was completed and published.
3. A partial Phase II Water Quality Management Planning Grant was approved by EPA, allocating to the State of Maryland approximately \$15,000 for Phase II work in 16 counties.
4. The Section developed a partial Phase II Work Program and submitted it to EPA.
5. 14 Public Advisory Councils and Governmental Policy Groups continued to work on Phase II water quality management planning.
6. A Steering Committee for Water Quality Management Planning was created for Phase II planning. Federal and local government representatives and the chairpersons of the citizen's group were added to the prior Interagency Committee of State personnel.
7. Work was initiated on identifying non-point source-related water quality problems and inventorying management practices.
8. Efforts continued to coordinate the Phase II water quality management program, the Coastal Zone Management program, and the *Environmental Protection Agency's Chesapeake Bay Study*.
9. An ad hoc task force was created to implement the *Resource Conservation and Recovery Act of 1976*.

MARYLAND PARK SERVICE

The Maryland Park Service provides recreational opportunities for Maryland's citizens and for the visitors to the State. The objectives of the Park Service are two-fold: (1) to protect and preserve the abundant natural resources on the approximately 80,000 acres of parkland within the State, and (2) to provide a diversified recreational experience to the park visitor within the framework of a protected environment.

Maryland Park Service Budget

General Funds	\$3,820,047
Special Funds	1,579,520
TOTAL	\$5,399,567

Resource Management

Increased recreational visitation on non-expandable park property creates situations that cause parks to be used beyond their natural carrying capacities. Various projects and activities seek to redirect use and to rehabilitate areas of overuse.

Some vegetative research plots have been established and are beginning to provide management answers to soil compaction and to revegetation. Picnic areas and camping sites in some parks have been rotated to allow the soil and the vegetation to rest and revitalize.

Public relations programs have been undertaken to promote use of new developments, including natural environment areas, in hopes of taking visitor pressure from other widely known and used parks.

Tree planting for soil erosion protection and provision of shade go hand in hand with shrub and flower plantings which enhance the park setting.

Conservation projects valued at nearly \$85,000 were accomplished by eighty members of the Youth Conservation Corps at seven parks.

Finally, extensive regeneration efforts occurred at a major day-use park where overuse has denuded an area. An educational program with leaflets and signs helped "sell" the merits of this long range park management project to visitors despite the short range inconveniences created.

The ever increasing numbers of people visiting Maryland's parks dictate a greater commitment on the Service's part to deal with the complicated and often critical land management problems of the State's parks.

Recreational Opportunities

Nearly 700 full-time and seasonal personnel provide well-kept facilities, helpful assistance and protection to campers in twenty-one campgrounds, and to picnickers in all the parks and at ten park beaches. Activities such as hiking, biking, fishing and boating give the park visitor an energy outlet. The traditional "summer season" in park attendance has expanded to include fall and winter activities such as ice skating, winter camping and cross country skiing. Visitors seeking these recreational opportunities are provided with the same services as the summer attendees.

Programming

Special events and programs were conducted in many parks. These programs are sometimes a cooperative effort between park personnel and local community organizations. They include activities such as canoe and bathtub races, rodeos, bicycling, fishing, wood chopping and sawing contests. These activities are extremely popular.

An increasing emphasis on nature and history programs resulted in the presentations of formal programs in twenty-five parks, providing direct activities to over 261,000 people. Very popular were the visitor participation programs, such as the Junior Park Ranger Program and Volunteers in the Park (VIP). Fall outdoor recreation programs in cooperation with local schools occurred in 7 parks.

Nature and History Programs:

- 1500 Separate Activities
261,000 Participants
- Junior Park Ranger:
Programs in all Parks
650 Participants
- VIP's:
In all Parks
300 Participants

Visitor Assistance and Protection

Personnel from the Maryland Park Service provided assistance to park visitors in many different ways — changing flat tires, opening cars when park users had locked their keys inside, towing disabled boats, and rendering assistance to local and state law enforcement agencies in accidents and traffic control.

Law enforcement officers, in performance of their duties, enforced *Natural Resources Article*, *Transportation Article*, and *Article 27*. They found it necessary to write 2951 citations and warnings to protect public property and the people of the State.

A brief summary of statistics for the Maryland Park Service is given in Table 12.

**Table 12. Maryland Park Service
Statistical Summary**

Number of Park Areas	49
Total Acreage	80,000
Number of Operating Parks	35
Park Service Employees	
Permanent	254
Seasonal	457
Annual Attendance	6,613,000
Average Cost/Visitor	\$1.37

MARYLAND FOREST SERVICE

The Maryland Forest Service manages forests and trees and promotes their values for the benefit of people.

Maryland Forest Service Budget	
General Funds	\$1,703,553
Special Funds	742,159
Federal Funds	621,107
TOTAL	\$3,066,819

The system by which the Maryland Forest Service seeks to provide adequate forest resources to the people of Maryland is divided into four major units of activity: State Forest Operations, Forest Protection, Technical Forestry and Reforestation, and the Roadside Tree Program.

STATE FOREST OPERATIONS

Ten parcels of public land, totaling 120,462 acres are protected, maintained and managed by this program:

Doncaster State Forest	1,485 acres
Elk Neck State Forest	2,996 acres
Garrett State Forest	6,824 acres
Green Ridge State Forest	28,305 acres
Pocomoke State Forest	11,584 acres
Potomac State Forest	12,098 acres
Savage River State Forest	52,599 acres
Seth State Forest	125 acres
Wicomico State Forest	1,110 acres
Cedarville Natural Resources Mgmt. Area	3,336 acres
TOTAL	120,462 acres

Timber Sales

Timber sales increased considerably in number, in revenue produced and in forest acres involved during FY 76. This was due mainly to demand, improved prices and greater volumes of mature timber available.

Increasing sales of State Forest firewood to private individuals by per-

mit was mainly responsible for the great increase in the total number of sales.

Timber Stand Improvement

From a cultural standpoint this activity is perhaps the most important. By selective thinning of prime forest stands, the best individual trees of the most valuable species are given improved growing conditions to speed growth and value. Due to good market conditions, accomplishments in this activity considerably exceeded expectations, although total accomplishments fell slightly short of 1976.

Reforestation

New State Forest land acquisition did not reach anticipated levels and open areas were not available for tree planting. The annual program of tree planting has reforested practically all State Forest areas suitable for planting.

Pest Control

Much of the year's activity related to monitoring the potentially dangerous Gypsy Moth, a serious hardwood defoliator.

Road Maintenance

Emphasis was placed on upgrading main forest roads by widening, improving drainage and signing.

Land Acquisition

The acquisition of new State Forest land was considerably less than in 1976, although progress was made toward acquiring several key tracts of land.

Forest Visitation

Forest visitation was down in 1977, due probably to weather and general economic conditions.

Other State Forest Activities

A swinging bridge over 15 Mile Creek in Green Ridge State Forest was constructed by the Youth Conservation Corps enrollees. This project was part of an eight-week summer program for local high school students.

In honor of the Garrett family, Swallow Falls State Forest was renamed Garrett State Forest.

A notable gift to the State during 1977 was the bequest of 60 acres contiguous to Elk Neck State Forest. This wooded farm property came to the Forest Service through the estate of Mrs. Emma Diggs. This interesting property is being developed as the "Digg's Farm Nature Center" and will be open to the public for conservation education and demonstration.

Some FY 77 statistics are presented in Table 13.

FOREST PROTECTION

This program is responsible for protection of 2,706,600 woodland acres and 994,000 non-forested watershed acres, valued at \$1,647,712,074 in 1972 dollars.

The drought cycle continued in Maryland during 1977. We had approximately 10 inches less total precipitation than occurred in FY 76, which had been the worst fire season in seven years. Rainfall was in short supply and occurred mostly in the winter months. The worst effects of the drought were evident on the Eastern Shore where fire season continued through summer. A comparison of fire danger class days between 1976 and 1977, illustrating the precipitation deficiency, is shown in Table 14.

The more severe fire season was reflected in the fire statistics as compared to 1976, as shown in Table 15.

The three main causes of wildfires in 1976 were: Children — 242; Incendiary — 158; and Debris burning — 133. These remained the three main causes in 1977, but the order shifted slightly: Incendiary — 260; Children

Table 13. Maryland Forest Service State Forest Operations Statistics

Activity	1976	1977
Sales of Forest Products (numbers)	120	360
Sales of Forest Products (acres)	777	1,097
Sales of Forest Products (income)	\$211,647	\$348,067
Timber Stand Improvement (acres)	1,472	1,412
Reforestation (acres)	507	429
Pest Control (acres)	769	824
Road Maintenance (miles)	305	316
Land Acquisition (acres)	749	264
Forest Visitors (number)	410,364	286,722
Total Budget	\$569,903	\$530,013
Total Expenditures	\$566,319	\$652,904

Table 14. Maryland Forest Service

Fire Danger Class	3	4	5
No. Days FY 76	33	50	15
No. Days FY 77	61	55	12

Table 15. Maryland Forest Service

	No. Fires	Acres Burned	Suppression Costs
FY 76	829	3,018	\$38,152
FY 77	908	5,678	\$29,721

— 223; and Debris burning — 123.

Forty-two Marylanders were sent to assist the *United States Forest Service, Department of the Interior*, and the *State of Michigan* on the Seeney forest fire on the upper peninsula of Michigan. This firefighting force consisted of 34 Forest Service employees and 8 volunteer firefighters under our direction.

They spent a total of sixteen days on the upper peninsula assisting in forest fire suppression. Through this program Maryland also participates in the *Middle Atlantic Interstate Forest Fire Compact* and assisted in the annual training program held in Dover, Delaware, in FY 77. The Maryland Forest Service hosted the *Northeast Forest Fire Supervisors* at the annual

meeting held in Annapolis in 1977.

The *Rural Community Fire Protection* project was continued in 1977, and a total amount of \$35,600 of federal funds was committed to assist with the equipping and training of rural fire companies throughout the state.

The Forest Protection Program also includes Insect and Disease detection and control. Most of our time spent in this phase was in Gypsy Moth detection and reporting. In this activity we assist and cooperate with the *Maryland Department of Agriculture*, which is the prime responsible agency. A total of 405 hours protecting 293,731 acres from Gypsy Moth was involved. Other activities involved with the detection and suppression of

insects and diseases included: 6 aerial surveys involving 21 staff hours and the protection of 824,448 acres; 13 ground detection surveys involving 46 acres; presuppression surveys involving 50 acres; and insect treatments involving 60 acres.

TECHNICAL FORESTRY AND REFORESTATION

The policy of the Maryland Forest Service TFR Program is to encourage, assist and guide private owners in the management and fullest economic development of privately owned forest lands.

The objective is to develop active management plans for 50 percent of the State's privately owned commercial forest land by the year 2000. This amounts to 1,442,500 acres. At the present time there are only 151,210 acres, among 1,634 owners, under active committed management.

Technical assistance is offered to the primary wood-using industry and to private woodland owners. Other areas of activity include planning and works of improvement for small watersheds, flood prevention programs; direction and coordination of the *County Forest Conservancy District Boards*; operation of the Forest Tree Nursery; administration of a program of Forest Conservation and Management; administration of the Pine Tree Reforestation Program; administration of the forest management portion of the Tri-County Resources Conservation and Development Program; and Urban and Community Forestry and Forest Land Use Planning.

Utilization

The Forest Products Utilization section is responsible for providing technical assistance primarily to the primary wood-processing industries. A staff of five technicians rendered 659 assists to 473 individuals or companies — extending the resource an additional 4 million board feet with a dollar value of more than \$660,000.

Private Woodland Owners

Our twenty-two project foresters developed long range management plans on 26,476 acres. Accomplishments within these and past plans included 3,997 acres planted; 2,334 acres of timber stand improvement and 6,483,000 board feet of timber marked for harvest.

Small Watershed Program

PL 566 and 534, although enacted at different times and for different purposes, now share the same objective. The purpose of the program is to provide protection from flooding and misuse of the water resource. The Maryland Forest Service provides technical assistance in the manipulation and protection of vegetation and soil on the watershed projects.

There are presently 5 actively funded small watershed projects in the State consisting of:

- St. Mary's River — 14,570 acres forested
- Potomac River — 367,900 acres forested
- Goldsboro — 4,400 acres forested
- Marshyhope Creek — 18,200 acres forested
- Upper Choptank River — 10,305 acres forested

Forest Conservancy District Boards

The purpose of *Forest Conservancy District Boards* is to encourage and assist people of the State in the wise use of trees for a multiple variety of benefits. Each county has a board with at least 5 persons from various walks of life. A President and Executive Committee coordinate State level activities, while each county has a Chairman to coordinate county activities.

Nursery

The Buckingham Forest Tree Nursery produces the seedlings for the reforestation program and those for the Wildlife Administration; 104,881 hardwood, 2,654,442 conifer and 91,750 wildlife shrubs were produced.

Twenty-six hundred Roadside Trees were produced, which is half of the planned production goal of 5,000 trees per year in the next five years. The nursery has acquired use of approximately 145 acres on Baltimore-Washington International Airport property. The additional roadside tree production will be concentrated there. Preliminary approval and arrangements have been made to use sewage sludge composted with chips for soil improvement on the airport property.

The Nursery currently operates eight and one-half acres of superior seed tree orchards. These young orchards only produced about thirty-five pounds of seed this year, but the future of the seedling production rests with these and other orchards.

Urban and Community Forestry

Urban and community areas are requiring more assistance with planning, ordinances and care of associated small woodlands and shade trees. The Maryland Forest Service has done a certain amount of this work as a part-time activity, but it has not been enough to meet the demand.

Federal funding on an 80-20 basis was obtained for a Rural Conservation and Development project, specializing in urban forestry for the Southern Maryland area. This is a first in the Nation for this type of project and is likely the forerunner of a permanent statewide Urban and Community Forestry Program.

Forest Land Use Planning

A staff member was assigned to the Department of State Planning, funded by a federal grant, to assist with and provide forestry input into the General State Land Use Plan and related programs. Accomplishments include development of the forestry section of the Natural Resources chapter of the plan, selection of new cover types, planning assistance to several counties and a program to update and republish individual county forest plans called "The Forest of . . . County".

See Table 16 — a summary of the accomplishments of the Technical Forestry & Reforestation program.

ROADSIDE TREE PROGRAM

This program is responsible for the protection of all trees growing within the rights-of-way of any public road. The 17 roadside tree personnel control the tree trimming operations of all the utility companies for both overhead and underground lines. Assistance is also offered to state and county roads departments, municipalities, public owned or controlled utilities, improvement associations, contractors, and private homeowners on tree care and maintenance requirements.

The program assists communities with their requirements to beautify their roadsides. Maryland Forest Service furnished 2,600 shade trees, at cost, for planting on the public rights-of-way.

Sixty-seven applicants for tree expert licenses were examined and 28 were licensed. Revenue from this activity was \$2,210.

Table 17 shows the activities of the Roadside Tree Program in FY 77.

Table 16. Technical Forestry and Reforestation Accomplishments

	1976	1977
Planting		
Tree Seedlings Distributed	4,805,000	2,759,323
Number of Areas planted	1,000	1,177
Acres planted	3,600	3,056
Management Assistance		
Requests Served	5,200	6,660
Management Plans Prepared (Acres)	21,172	26,476
Sawtimber Harvest (Mbf)	7,100	6,483
Timberstand Improvement (Acres)	1,500	1,216
Watershed Improvement		
Critical Areas Planted (Acres)	309	395
Forest Management Plans (Acres)	4,731	5,558
Proper Harvesting Practices and Marketing Assistance (Acres)		
	269	158
Stabilization of Soil (Acres)	50	55
Fire Roads & Trails Constructed (Ft.)	3,400	34,058
Wildlife Habitat Development (Acres)	39	3
Grazing Control (Acres)	48	154
Forest Products Utilization Assistance		
(Number of Assists)	32	659
Urban and Community Forestry Assistance		
(Number of Assists)	410	724
Forest Conservation and Management Agreements		
Number	76	144
Acres	8,021	9,663

**Table 17. Maryland Forest Service
Roadside Tree Program**

Activities FY 77	1976	1977
No. Hours of Supervision	N/A	29,511
No. Permits Issued	2,030	2,200
Landowner Consultations	2,112	2,200
Roadside Trees Planted	2,600	2,600
Tree Expert Licenses Issued	282	260

MARYLAND ENVIRONMENTAL SERVICE

The Maryland Environmental Service, a quasi-public corporation serves the State, local governments and private interests in providing water, wastewater and solid waste management technology in Maryland through experimental and innovative programs.

Maryland Environmental Services Budget	
General Funds	\$ 542,565
Special Funds	881,920
Federal Funds	30,225
Reimbursible Funds	839,002
TOTAL	\$2,293,712

MES may plan, design, finance, construct and operate facilities such as wastewater treatment plants, water treatment and supply facilities and solid waste disposal systems, including resource recovery facilities. Presently, MES operates all State-owned water and wastewater treatment facilities. MES serves as a contract agency for local governments and industry. Utility operations are self supporting from fees and charges received from State institutions and contract customers.

During FY 77, MES had a combined operating budget of \$12,159,900. The General Fund expenditure was \$542,565. Remaining funds came from grants and the agency's utility operations. MES owns four major facilities with a combined capital construction cost of \$18,800,000.

OPERATION AND MAINTENANCE

MES offers a complete program in operating water supply and wastewater treatment facilities. The Service has an operating force of over 80 certified operators and supervisors. A quality control section of trained technicians collects and analyzes samples in modern, well-equipped laboratories. A backup team of engineers and mechanical specialists provides statewide, 24-hour coverage. MES personnel also handle regulatory agency permits. By the end of FY 77, MES had responsibility for the operations and maintenance of 32 water and 53 wastewater facilities serving populations of 49,200 and 71,000.

DESIGN AND CONSTRUCTION

Significant advances have been made by MES in its solid waste management and resource recovery programs. One of the Nation's most successful large-scale projects for resource recovery from municipal solid waste is nearing completion at Cockeysville. During FY 77, this facility was processing an average of 425 tons per day of municipal solid waste. Over 6,504 tons of ferrous materials with a value of \$73,238 were recovered. Another \$727 for "white goods" (refrigerators, washing machines, etc.) was salvaged. Additionally, over 356 tons of refuse derived fuel (RDF) were prepared for test burning in major industrial installations.

During the year, land was acquired for the construction of the Southwest Transfer Station in Baltimore County, to support the Resource Recovery Plant and enable the County to handle solid waste more efficiently and effectively.

MES is investigating smaller-scale programs for rural areas. The Seerdum technique is widely used in Europe and is being investigated by MES and Wicomico County. A joint venture between MES and Ocean City has resulted in over 240,000 tires being placed in artificial reefs off the coast. During FY 77, over 140,000 tires were added to the reefs.

In cooperation with USDA *Agricultural Research Service*, MES continues to operate its highly acclaimed sludge composting research project in Beltsville. The success of this program has resulted in commitments from local and State governments and EPA to compost all sludge produced by Washington's Blue Plains Sewage Treatment Plant. During the year, MES composted 15,564 tons. Another 7,461 tons were processed under contract to MES through the Organic Recycling facility in producing a soil conditioner-fertilizer, while 112,401 tons were entrenched by MES in Montgomery and Prince George's Counties in accordance with the Blue Plains Agreement.

TECHNICAL SERVICES

In carrying out its technical services and planning functions, MES has responsibility for conducting 11 Step One and 1 Step Two studies for State-owned facilities. In addition, MES, under contract, is directing the Central Patuxent Step One study for Prince George's and Anne Arundel Counties and the City of Bowie and the Twin Beaches Step One Study for Anne Arundel and Calvert Counties.

MES conducted a project in cooperation with the Seafood Processors and the University of Maryland to investigate methods to enable processors to meet discharge standards. This work was funded by an EPA grant and State Water Quality Loan Funds. The hazardous waste file was completed under an EPA grant. This provides the State with a valuable data base to conduct solid waste and hazardous waste planning and to better understand and manage hazardous waste problems.

FISHERIES ADMINISTRATION

The Fisheries Administration is responsible for all aspects of the preservation, enhancement, development, and use of all Maryland's fishery resources. Management Programs are carried out for both sport and commercial fishing interests included in tidal and non-tidal environments.

Fisheries Administration Budget

General Funds	\$ 259,707
Special Funds	2,808,905
Federal Funds	354,317
TOTAL	\$3,422,929

GENERAL DIRECTION

This program includes the overall direction, supervision, and coordination of the activities of the Fisheries Administration. Staff projects including Fisheries Statistics and Finfish Mortality Investigations are an integral part of this program, as are personnel and Federal Aid Project Coordination functions.

Fisheries Statistics Project

The Fisheries Statistics Project is responsible for compilation of data relating to the various fisheries resources of the State. During the fiscal year, over 200,000 reports of commercial seafood harvest were received, processed and stored in a historical data bank. (Table 18 — Seafood harvest statistics.)

Finfish Mortality Project

Fifty-one fish kills were investigated, seven and a half percent less than the previous fiscal year. There were 35 kills in tidal waters, 11 in ponds, and 5 in flowing streams. The major shifts from the trends of FY 76 were a twenty-five percent increase in tidal mortalities and a forty-five percent decrease in pond kills.

Kills of young-of-year menhaden in tidal creeks on the western shore due to low dissolved oxygen were extensive during the summer months of 1976. Kills of this type are due largely to the immense numbers of these small fish in the Bay.

The spring 1977 die-off of yearling menhaden was unusually light. Small numbers of dead fish surfaced for several days resulting from a kill of thousands compared to millions in recent years. No new clues in this nearly annual phenomenon have been discovered.

A study being conducted at the University of Maryland School of Medicine to determine specific causes of fish kills through water and tissue analyses had planned to concentrate on the 1977 spring menhaden mortality, but for only the fourth time in the last twenty years the mortality did not fully materialize. This study is funded seventy-five percent by federal funds and twenty-five percent by special funds. The total cost for this study in FY 77 was \$54,781.

The extremely cold winter of 1977 did not produce a visible massive kill of spot in the Chesapeake Bay as had occurred during the winter of 1976. Because of cloudy ice and snow cover, the unusual cold in January and February did not result in large numbers of pond kills.

The work agreement with the *Southeastern Cooperative Fish Parasite and Disease Project* at Auburn University was continued. Reparations for two fish kills that occurred in FY 77 were paid to the Department in the amount of \$1,963.

SHELLFISH PROGRAM

The Shellfish Program is comprised of the following projects:

- Oyster Propagation
- Soft Clam Management
- Hard Clam Management
- Blue Crab Management
- Marine Animal Disease

Oyster Propagation

This was another poor oyster recruitment year for the Chesapeake Bay, following the recent trend set in the early 1970's. Spatfall was poor in the State Seed Areas and, with the exception of a few areas in the lower Chesapeake Bay in the vicinity of Tangier Sound, spatfall was mainly absent on the remaining public beds. The 1974 spatfall was the best in seven years with 61% of the samples being rated at good to excellent. These oysters are now reaching market size, contributing significantly to the 1977-78 harvest.

The majority of the oysters transplanted this spring were small oysters, not one year old spat. Many will be harvestable during the 1977-78 season.

FY 77 oyster plantings are shown in Table 19.

The majority of the 1976-77 harvest was composed of oysters that were spawned in 1973, which was a very poor "hatch". The Fisheries Administration moved 375,815 bushels of seed from the 1973 set in the spring of 1974 at a cost of \$168,081. At the 1976-77 average dockside price per bushel of \$7.34 it is estimated that the seed operation netted a return of \$1,042,698 to harvesters.

Seafood Harvest FY 77

County	Oyster Sept. 1976-August 1977		S.S. Clam July 1976-June 1977		Finfish July 1976- June 1977
	Bushels	\$ Value	Bushels	\$ Value	Pounds
Anne Arundel	91,050	755,665	3,988	83,476	837,485
Baltimore	—	—	—	—	89,017
Calvert	47,154	355,674	137	3,425	53,760
Cecil	—	—	—	—	244,729
Charles	34,775	213,026	—	—	95,992
Caroline	—	—	—	—	50,035
Dorchester	326,979	2,205,428	24,506	480,436	11,333,325
Harford	—	—	—	—	70,632
Kent	20,473	151,113	721	14,383	895,481
Montgomery	—	—	—	—	3,577
Prince George's	—	—	—	—	36,805
Queen Anne's	441,957	3,403,755	8,246	139,769	39,861
St. Mary's	170,649	1,372,595	1,501	25,715	414,407
Somerset	57,067	416,142	44,449	970,664	172,912
Talbot	648,902	4,664,419	28,272	542,527	151,465
Wicomico	36,717	271,958	—	—	117,234
Worcester	57	412	—	—	32,639
Statewide	1,875,780	13,810,187	111,820	2,260,395	4,639,356

**Table 19. Fisheries Administration
Oyster Plantings — 1977**

	Cost	Bushels
Seed	\$258,525	516,580
Fresh Shell	138,008	473,600
Dredge Shell	831,553	5,019,037

Soft Clam Management Project

A soft clam bed monitoring program using a commercial hydraulic clam rig revealed a good 1976 set on many of the upper bay areas and harvest conditions should improve in 1978.

A bottom re-survey of charted oyster bars in the Choptank River resulted in 1075 acres being re-designated as public clamming grounds. DNR catch records attribute 7500 bushels of clams valued at \$150,000 to the reclassified areas at Kirbys, Castle Haven and Todd Point.

An attempt is being made to understand the oyster mortalities which have been occurring in the upper Chester River. Stocks of lower Chester River oysters have been introduced into the kill area and mortality counts and histological examinations are made on a regular basis.

Hard Clam Management Project

The Hard Clam Project continued to plant seed clams in an attempt to build up the industry. A total of 1,232,000 seed clams were planted at a cost of \$15,776. Seventy percent were planted in Chincoteague Bay and 30% in Isle of Wight and Assawoman Bays. The project continued to monitor the available resource for population density and biological condition.

Blue Crab Management Project

During FY 77, the Blue Crab Management Project continued its annual population survey seeking to determine the strength of each new year class. Data collected each year are compared to historical data and a prediction is made approximately one year in advance as to what the Maryland commercial harvest of blue crabs will be.

Another study, conducted during the summer of 1977 to compare shedding mortality rates between groups of red/pink sign peelers and white sign peelers held in commercial shedding tanks, will be completed in FY 78.

Another study initiated seeks information on the length/width relation-

ship of different size crabs. This study will help managers to make decisions concerning changes in crab pot mesh sizes.

The Fisheries Administration adopted three new regulations on catching crabs for the 1977 season. Scrape size was increased to 48 inches in width and 45 pounds in weight. Bank traps and channel pounds can be used in additional areas of the Manokin River. Finally, channels were established in the mouth of specific river entrances in which no buoyed crab pots can be set.

Aerial surveys were conducted throughout the Chesapeake Bay and seaside bays to determine concentrations of crab pots, and crab traps, and placement of bank traps and channel pounds. Monitoring of the crab pot free channels was also possible with this survey.

Marine Animal Disease Investigations

This project is 75% Federally funded and 25% State funded. The purpose of the project is the study of diseases of shellfish in the Maryland portion of Chesapeake Bay and its tributaries, selected areas of Chincoteague Bay and other main bodies in Maryland.

Cooperative work efforts with the Horn Point Environmental Laboratory led to our participation in "BITE" (Bay Ice Team Effort), a survey to assess the effects of the severe winter on Bay resources. These efforts resulted in "early warning" of potential mortality areas, critical information for resource management. The *Dermocystidium marinum* study resulted in information on the range, distribution and prevalence of this oyster pathogen. Safe and disease-enzootic areas are now recognized. This information can be of great use when determining locations for oyster seed plantings. It is also very important not to transplant oysters from diseased areas to "clean" areas.

Papers presented orally and published at international meetings have constituted the first reports of chlamydia, rickettsia and mycoplasma in

respectively, hard clams, soft clams and oysters as well as the first report of a chlamydia infected by a virus.

One of the more conspicuous results of this work has been oral presentations and publications of the following papers:

Neoplasms in Bivalve Mollusks from the Upper Chesapeake Bay and Adjacent Tributaries

A Gregarine-Like Parasite Associated with Pathology in the Digestive Tract of the American Oyster, Crassostrea virginica

Dermocystidium marinum Disease of Oysters in Chesapeake Bay

Report of the Chester River Study

Disease Distribution in Chesapeake Bay

Chlamydia (with Phages, Mycoplasmas, and Rickettsial in Chesapeake Bay Bivalves)

General Pathology and Chlamydial, Rickettsiae and Mycoplasmic Infections of Mollusks of Chesapeake Bay, U.S.A.

Neoplasia in Mollusks

Bay Research Publicity — Some Advantages and Disadvantages

This is the only project in the Fisheries Administration providing histological evaluations of the Bay shellfish resources. As such, it can work cooperatively with almost every other project in the Administration.

TIDEWATER FINFISH PROGRAM

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

Resident Species Project

This project conducted surveys of spawning, production, and harvest to include the major species: striped bass, white perch, and all forage species as well as other pelagic species such as bluefish and menhaden.

The major source of information collected by this project is presented in the publication *Estuarine Fish Recruitment Survey*, federally aided project F-27-R-3. The report *The Status of Striped Bass and Maryland's Role in the Fortunes of this Valuable Fish*, was also produced by this project.

Anadromous Fish Project

This project completed an intensive survey of the Chester River Drainage with emphasis on American shad, blueback herring, and alewives.

Data and information obtained by this project is contained in *Segment Report, Project AFC-9-1 for Chester River Drainage in Kent County*. Another project publication, *A Preliminary Study of the Occurrence of the American Eel and Other Finfish Species in Maryland*, is also now available for distribution.

Marine Finfish Project

This project conducted surveys and inventories of marine species occurring in coastal bays, inshore and offshore ocean areas.

Information is available for over 200 sites in the form of field reports on file. The publication *The Lure of Natural Bait* was produced by this project.

The management information produced is used in all phases of environmental protection and in determining potential losses from habitat destruction. Projections are made of commercial and sport species stock levels and their potential harvests.

THE TECHNICAL ASSISTANCE AND ENVIRONMENTAL MODIFICATIONS REVIEW

Maintenance and enhancement of aquatic biota populations is dependent upon maintaining and improving the ecosystems upon which these populations depend. Accomplishing this is central among the goals of the Maryland Fisheries Administration. Review of proposed changes to the environment and recommendation on those proposals is the primary means of agency input toward assurance that the ecosystem will be maintained.

This program and project is the Fisheries Administration's arm for making inputs. The program/project comments on all department issued permits for channel modification, wetlands change, pollutant discharge, and surface water appropriations which would affect the aquatic habitat. In addition, the program/project comments on *U.S. Corps of Engineers* permits, environmental impact statements, coastal management plans, and regional waste treatment management.

In FY 77, the program/project received for comment 1,628 environmental modification proposals. 188 of these received detailed treatment and responses. Agency policy for most situations involving urbanization was developed. Most comments detailed recommendations for reducing or eliminating environmentally harmful effects.

Chesapeake Bay Sport Fishing Survey

Knowledge of total fishing pressure and harvest is necessary to monitor trends and determine if fishing regulations or management techniques are needed. In response to these needs a sport fishing survey was designed to determine the extent of the sport fishing effort, harvest, and accompanying economic value of a large portion of Maryland's Chesapeake Bay.

During the period May 13, 1976 to September 27, 1976 project personnel interviewed nearly 11,000 persons landing at eight access points around the surveyed area of the Bay. Catch, length of trip, expenditures, residence, and comments were recorded from each angler. Coincidental with data collection from private boat anglers, similar information was collected from 2900 charter boat anglers fishing in the surveyed area. Data from the survey resulted in a 100 page report which detailed findings and compared and contrasted results from a similar 1962 survey. This report discussed economic, recreational, sociological and ecological aspects of Bay sport fishing and makes some projections of trends.

Highlights of the survey information appear in Table 20.

Table 20. Fisheries Administration

Highlights of Chesapeake Bay Sport Fishing Survey

Miscellaneous Survey Data

Total Survey Area: 582 square miles from Poole's Island in the north to Sharp's Island in the south, Eastern Bay, Wye River, and Choptank River below Cambridge Bridge.

Period of Survey	May 13 to October 27, 1976 (167 days)
Number of Survey Days	51
Number of aerial counts scheduled	51
Number of aerial counts canceled	9
Number of people interviewed	13,882
Estimated angler trips, Private — 5.3 hrs. per trip	348,073
Estimated angler trips, Charter — 6.6 hrs. per trip	63,144
Estimated number of finfish caught	1,478,500
Estimated pounds of finfish harvested	3,788,400
Estimated pounds of crabs harvested	726,000
Estimated pounds of striped bass harvested	535,800
Estimated pounds of bluefish harvested	2,915,200
Average daily expenditure for a resident	\$7.20
Average daily expenditure for a non-resident	\$11.93
Total angler hours of effort by area:	

	Private	Charter
Area 1	725,387	196,934
Area 2	395,115	219,817
Area 3	359,208	*
Area 4	292,805	*
Area 5	72,269	*

INLAND FISHERIES MANAGEMENT

This management unit includes the coldwater and warm water programs.

Coldwater Fisheries Program

Trout Production and Stocking The number of catchable size trout (See Table 21) produced and/or stocked during FY 77 was 10,000 fish more than the previous fiscal year. This was in spite of a 10,000 fish reduction in our federal trout allocation and the permanent loss of two raceways at the Albert M. Powell State Trout Hatchery due to flood damage. In addition, approximately 200,000 surplus fingerling trout were stocked into selected waters of the State in the hope of providing a future trout fishery.

Stream Survey Project Field operations of the Cold Water Fishery Section were primarily directed toward the continuing stream survey. During FY 77, approximately 150 segments of streams were studied within Harford, Washington, Frederick, Carroll, and Garrett Counties relative to their potential use with the trout program. Results of these studies are published in *Federal Aid Reports* prepared by project personnel. Federal funding of this project during FY 77 amounted to over \$18,000.

Warmwater Fisheries Program

The Maryland Warmwater Fisheries Program is responsible for the management of inland fishery resources in all streams, rivers, ponds, lakes and canals publicly or privately owned extending to the tidal boundaries designated by law.

During FY 77, Maryland had over 150,000 licensed anglers fishing in 49,993 surface acres of non-tidal fresh fishable water. Included as part of this figure are 26,196 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.

**Table 21. Fisheries Administration
Catchable Size Trout**

Facility	Number	Total Weight
Albert Powell Hatchery	138,700	47,825 pounds
Cushwa Rearing Station	18,000	7,425 pounds
Bear Creek Rearing Station	43,875	21,350 pounds
Federal Hatcheries	20,000	6,665 pounds
TOTAL	220,575	83,265 pounds

**Table 22. Fisheries Administration
Fish Stocking, FY 77**

Age	Species	Numbers
Adv. Fingerling	Largemouth Bass	8,000
Fingerling	Largemouth Bass	70,000
Fingerling	Bluegill Sunfish	325,000
Fingerling	Red-ear Sunfish	20,000
Fingerling	Channel Catfish	15,000
Adult	Channel Catfish	25,000
TOTAL		463,000

Warmwater Fish Production and Stocking Stocking activities for FY 77 are shown in Table 22.

At present Phase I of Joseph Manning Warmwater Fish Hatchery is under construction at a construction cost of 1.2 million dollars. Completion should be accomplished within a two year period.

Federal Aid Studies and Projects

- Potomac River Study — Second Year Completed
- Deep Creek Lake Walleye/Yellow Perch Study Completed
- Warmwater Fisheries Investigations
 - Channel catfish life history — upper Bay — Second Year
 - Largemouth Bass life history — upper Bay — First Year
- Warmwater Fisheries Development was responsible for the printing and distribution of 10,000 free Liberty Reservoir Fishing maps.

Approximately fifty lakes and ponds were checked by program personnel. Seven reservoirs were studied and had good Black Bass spawning success. The second year of Potomac River Investigations encompassed 18

sampling stations for water quality data and benthic macroinvertebrate collection. Water quality was very poor in that portion of North Branch Potomac River above Cumberland, but had improved at Oldtown and was much improved at Little Orleans.

A total of 100 taxa were identified from the Potomac River Watershed. The majority of macroinvertebrates collected belonged to insect orders with the Diptera being the most numerous (67.3%) followed by Tricoptera (12.3%) and Ephemeroptera (5.3%).

A total of 49 fish species were collected and identified from the Potomac and Monocacy River during FY 77. Recruitment of Smallmouth Bass was considered to be excellent in 1976 for the second consecutive year.

Studies on Deep Creek Lake revealed that Walleye growth was normal but no evidence of natural reproduction was noted. Future stockings of Walleyes will come from lake spawning stocks. Yellow Perch constitute 100% of the fish diet of Walleyes in Deep Creek Lake.

WILDLIFE ADMINISTRATION

The Wildlife Administration's goal is "the maintenance of sufficient wildlife populations to meet the demand for wildlife oriented recreation and to ensure the continued survival of all wild flora and fauna in the State."

Wildlife Administration Budget

General Funds	\$ 43,527
Special Funds	1,332,938
Federal Funds	609,588
TOTAL	\$1,986,053

WILDLIFE ADMINISTRATION

The agency is composed of seven programs. They are Land Management and Technical Services; Forest Wildlife, Furbearer and Marine Mammals; Migratory Waterfowl; Nongame and Endangered Species; Upland Wildlife; and Environmental Services. Each program monitors its respective species, their distribution and abundance, and the habitat changes affecting them. The information collected is presented to the public through correspondence, reports and public meetings.

Maryland's wildlife management and research efforts are financed almost entirely by hunters; thus most management efforts in habitat manipulation or control of animals are directed toward game animals. However, all wildlife species are considered in management decisions, which results in nongame species benefiting from game management practices.

Wildlife Administration regulates seasons, bag limits and methods of taking game, assists in land management and planning, issues permits and licenses for activities that directly affect wildlife, provides technical assistance for nuisance wildlife, and provides areas for public use, including hunting, trapping, field trials, nature study and photography.

LAND MANAGEMENT AND TECHNICAL SERVICES PROGRAM

This program has varied functions, including disseminating information regarding policy and regulations con-

cerning wildlife, technical assistance and advice on wildlife propagation, control and land management plans.

During FY 77 licenses and permits were issued to over 1,000 people who dealt in some way with wildlife, exclusive of hunting and trapping, and district personnel provided over 1,000 people with technical assistance and environmental reviews.

Additional land acquisitions in FY 77 amounted to 4,139 acres, making the total acreage of State Wildlife Management Areas 73,486.

FOREST WILDLIFE PROGRAM

This program is responsible for management of the 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 hunting recreation afield.

In 1976 a research program was initiated to determine rates and population dynamics of gray squirrels. This life history study is underway and should be completed by 1986.

A life history study on white-tailed deer is also underway, as is a detailed life history on sika deer. Research on deer, turkey, squirrel and grouse populations and their relationship to habitat types and habitat changes is being conducted at the Indian Springs Wildlife Management Area. A slide program on various aspects of the life history, distribution and abundance of deer is being presented to the public by District Wildlife Managers.

FURBEARER AND MARINE MAMMAL PROGRAM

This program is primarily responsible for the management of eighteen species of furbearers in Maryland. The program staff is negotiating four extensive fur-bearer research projects on raccoon, bobcat, gray fox, and nutria through contracts with the Appalachian Environmental Laboratory in Frostburg. A three-year otter study was completed in 1977. Various public and private projects involving furbearers' habitat were reviewed.

A Marsh Ecology and Furbearer Management program was initiated in two Dorchester County high schools to teach students prudent management of wetlands and their fur-bearing resources.

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. All of these birds are largely migratory with only a small portion of the fall and winter populations being produced within state boundaries.

Undertaken in FY 77 were surveys of waterfowl distribution and abundance, surveys of habitat, and surveys of waterfowl harvest, mortality and hunter use.

January 1977 waterfowl surveys indicated that total waterfowl — 776,700 — in Maryland increased significantly in comparison to the January 1976 estimate of 687,800. Large increases were noted primarily among mallards, black ducks, scaup, snow geese and Canada geese. Extensive ice coverage caused by prolonged freezing reduced feeding areas for diving ducks and made many waterfowl species more observable to survey personnel.

Surveys of the changes and conditions of waterfowl habitat indicated a significant increase in baygrasses from

the last fiscal year. Experimental planting of submerged seagrasses was unsuccessful. Additional experiments have been started to determine the limiting factors. An education program on the steel shot regulation for waterfowl hunters was begun.

NONGAME AND ENDANGERED SPECIES PROGRAM

The Nongame and Endangered Species Program includes those species of wildlife not legally classified as game birds or mammals and threatened or endangered species. These include thirty-seven species of amphibians, forty-six species of 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 collecting permits. The Endangered Species Program of the Maryland Wildlife Administration is continuing several studies initiated over the past year. A cooperative agreement for the conservation of endangered species was signed with the U.S. Fish and Wildlife Service, making the state eligible for matching funds under the 1973 Federal Act. Current species investigations are designed to determine the distribution and population status of the Delmarva fox squirrel, Jefferson salamander, bald eagle, eastern tiger salamander, red-cockaded woodpecker, peregrine falcon and bog turtle.

Several raptors were rehabilitated and released into the wild through the cooperation of the University of Maryland and the Nongame Program. Other continuing aspects of the Nongame Program include cooperation with county humane societies for the resolution of nuisance wildlife problems, and the issuing of bird banding, scientific collecting and endangered species permits.

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 distribution and abundance of the New England cottontail in Western Maryland, and a population study of rabbits on Blakistone Island was conducted. Trend surveys were conducted on pheasants, quail, and woodcock. Mortality studies were conducted on quail and rabbits on wildlife management areas. Several new varieties of seeds were evaluated as potential material for food plots.

A hunter use survey was completed to determine estimates of number of hunters, effort and harvest.

ENVIRONMENTAL 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 program also coordinates and supervises the planning efforts on wildlife management areas and coordinates planning efforts with other agencies.

The Environmental Review project has concentrated on better coordination and review of wetland projects, roads and bridges, and SCS PL 566 drainage projects. Better methods of construction and requested alternative designs have greatly benefited wildlife habitat and endangered species. Recommended areas of critical state concern have been referred to the Department of State Planning and these recommendations are continuing.

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. This planning effort will continue until all areas have a completed five year plan.

Federal surplus lands have been acquired in Anne Arundel County and acquisition efforts are presently underway in Talbot County.

ENERGY AND COASTAL ZONE ADMINISTRATION

The Energy and Coastal Zone Administration's mission is to evaluate the production and conservation of energy while keeping adverse environmental and fiscal effects to a minimum.

**Energy and Coastal Zone
Administration
Budget**

General Funds	\$ 164,971
Special Funds	4,539,500
Federal Funds	878,205
TOTAL	\$5,582,676

The four operating programs within the administration are Power Plant Siting, Bureau of Mines, the Coastal Zone Program and the Energy Policy Office. All four accomplish their tasks mainly through special and federal monies.

POWER PLANT SITING

The Power Plant Siting Program is charged with evaluating the location, construction and operations of existing and future power plants. Areas of work are (1) Impact Assessment, (2) Site Evaluation, (3) Research, and (4) Site Acquisition.

See Table 23 for a summary of Power Plant Siting activities.

BUREAU OF MINES

With the implementation of new legislation 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 for the land are reviewed and must be approved before the mining operation can begin. Active mines are monitored for compliance with the law and agreement with the approved plans.

Table 24 gives Active Mines Program statistics.

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

See Table 25 for a summary of Abandoned Mines Projects.

Table 23. Energy and Coastal Zone Administration, Power Plant Siting

Summary of Activities FY 77	1976	1977
Sites Evaluated	4	4
Impact Assessments Underway	5	4
Sites Acquired or Proposed for Acquisition	1	2
Research Projects	18	15
Reports Issued	25	5

COASTAL ZONE MANAGEMENT

The Coastal Zone Unit is responsible for developing a management program to preserve, protect, develop and, where possible, restore coastal resources in Maryland.

FY 77 represents the third year of a three-year development period for the program. Implementation of a state coastal zone program is expected to begin in FY 78.

During the year the staff has worked to complete a draft of the implementation plan which will be used in the coastal zone. Participation in the plan design was an integrated effort of state agencies, local governments and public participation. Public participation consisted of all sectors of the economy and geographics of the coastal zone. Studies and inventories were started and completed to enable the program to better evaluate proposed expansion of the coastal zone. (See Table 26.)

ENERGY POLICY OFFICE

The Energy Policy Office is a new program of the Energy and Coastal Zone Administration. The Energy Policy Office is actively engaged in the allocation and conservation of existing energy sources by the end users.

**Table 24. Energy and Coastal Zone Administration
Bureau of Mines**

Active Mines	1976	1977
Number of Active Mines	91	115
Tons Mined	2,821,851	2,719,444
Number of Mining Plans Reviewed	80	86
Acres Permitted	1,566	1,978
Acres Reclaimed (Calendar Year)	881	479

**Table 25. Energy and Coastal Zone Administration
Bureau of Mines**

Abandoned Mines	1976	1977
Projects Started	8	5
Number of Acres Reclaimed	40	47.5

**Table 26. Energy and Coastal Zone Administration
Coastal Zone Administration**

Studies	
Aquatic Studies	6
Terrestrial Studies	5
Methodology Studies	2
Recreational Studies	1
Economic Studies	1
Archeological Studies	1

MARYLAND GEOLOGICAL SURVEY

Through scientific investigations and analysis, the Maryland Geological 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.

Maryland Geological Survey Budget

General Funds	\$776,335
Special Funds	149,941
Federal Funds	938
TOTAL	\$927,214

Examples of the concerns of the Maryland Geological Survey include water supply, water pollution, assuring continuing supply of mineral resources, the many ramifications of land use, the use of the Bay and Bay bottom, shore erosion and shore protection, and the preservation and study of archeology sites threatened by development.

Survey expenditures declined slightly from \$932,472 in FY 76 to \$927,214 in FY 77. The decline resulted from a decrease in Special Funds and Federal Funds.

ADVISORY ACTIVITIES

Through its Director, the Survey is involved with a number of intra-state and state/federal advisory activities. These functions include:

1. *The Mid-Atlantic Governors' Coastal Resources Council*, which includes membership from the five mid-Atlantic states and is organized to address problems related to oil and gas exploration activities on the Outer Continental Shelf.
2. *The Outer Continental Shelf Environmental Studies Advisory Committee*, which consists of one representative from each coastal state, along with federal and private members, and meets quarterly to address technical environmental issues revolving around the leasing and exploration of potential oil and gas lands on the Outer Continental Shelf.
3. *The Interstate Mining Compact Commission*, which includes representatives of the governors of twelve member states and is organized to study and recommend practices which will mitigate the environmental effects of mining while at the same time encouraging the

production of needed minerals. The Survey Director represented the Governor as Chairman of the Interstate Mining Compact Commission during calendar 1977.

PUBLICATIONS

Survey publications are distributed throughout the world. Publication recipients in Maryland include county libraries, universities and colleges, federal, state and local agencies, legislators, consultants, and the general public. The Survey exchanges scientific publications with 1,027 universities, state and federal agencies and other groups in the United States and 147 international organizations. In FY 77, the Survey distributed 17,972 copies of its publications. Cash receipts for sales of publications totalled \$26,077 in FY 77.

The primary means of communication is through publication of scientific investigations as reports and maps. Three Information Circulars were published: I.C. No. 22 — *Coal Reserves in Maryland — Potential for Future Development*; I.C. No. 23 — *Reconnaissance Survey of the Severn River Sediments*, and I.C. No. 24 — *The Mineral Industry of Maryland in 1974*. Two reports were reprinted: R.I. No. 27, *The Geology of the Crystalline Rocks Near Baltimore, Maryland and its Bearing on the Evolution of the Eastern Maryland Piedmont*, and Guidebook No. 3, *Environmental History of the Maryland Miocene*.

Washington and Cecil County Topographic Maps were sent to the printer, and the Queen Anne's, Wicomico, and Somerset County Topographic Maps

were reprinted. The White Marsh and Catoctin Furnace Quadrangle Geologic Maps were published, as were the Bel Air and Jarrettsville Quadrangle Hydrologic Atlases.

HYDROGEOLOGY AND HYDROLOGY

Water Data Network

The Hydrogeology and Hydrology Program, in cooperation with the *U.S. Geological Survey*, is responsible for the maintenance of a state-wide water data network and the investigation of the hydrologic and hydrogeologic characteristics of Maryland water resources.

Investigations are carried out under the auspices of the U.S. Geological Survey/Maryland Geological Survey Cooperative Agreement, whereby funds budgeted by the state and participating intrastate agencies are generally matched by the federal government on a 50/50 basis. Comparing FY 76 to FY 77, State General Funds increased slightly, intrastate Special Funds decreased by \$18,000, and total funding decreased by about \$25,000.

In the Water Data Network three projects were active:

1. **Stream-Flow Gaging Network** This project operates and maintains eighty-four continuous record stream gaging stations and fifteen crest-state, partial-record stations.
2. **Water Quality and Sediment Network** Surface water samples for chemical analysis were collected monthly at four network stations and quarterly at nine other stations. Regular sampling at four suspended sediment stations was continued in the Potomac River Basin.
3. **Ground Water Data Network** This project maintains a continuing inventory of ground water levels in aquifers and selected springs of the state and relates changes in ground water levels to withdrawals and participation. One hundred and four wells and springs comprise the regular network, and over two hundred and ninety-five wells were being measured synoptically as part of aquifer research projects in several Piedmont and Coastal Plain counties.

ENVIRONMENTAL GEOLOGY AND MINERAL RESOURCES

This program is responsible for geologic research, geologic mapping, topographic map revision, environmental geology, mineral and energy resource investigations, and dissemination of geologic information concerning the state to the public at large. Such studies provide the basic framework for determining and managing mineral and land resources within the state, and generate the geologic data necessary for wise land use decisions. Geologic mapping projects provide the best available data on the three-dimensional distribution on geologic formations.

The following investigations were underway or completed in FY 77:

1. *Baltimore-Washington Urban Area* New publications for the year include the Anne Arundel Geologic and Environmental Atlas and geologic maps of the White Marsh and Reisterstown 7.5 Quadrangles. A number of Carroll County quadrangle slope maps were prepared, including Lineboro, Manchester, New Windsor, Littlestown, Westminster, Winfield, Hampstead and Finksburg. Geologic mapping in the Finksburg 7.5 Quadrangle was undertaken. Work was completed on the Prince George's County Mined Land Inventory and a map is being assembled for publication.
2. *Middletown Valley Geologic Mapping* Geologic mapping in the Middletown Quadrangle was completed. The Catoctin Furnace-Blue Ridge Summit Quadrangles were sent to the printers, and compilation of the Myersville Quadrangle was almost complete.
3. *Mt. Vernon/Piscataway Geologic and Environmental Atlas* The preparation of the maps making up this atlas is essentially complete, and publication is expected in FY 78.
4. *Topographic Maps* Revised topographic maps of Carroll and Cecil Counties were published. A new Washington County map is in press, and the Somerset and Wicomico County maps were reprinted.

5. *Miscellaneous* Work is complete on a popular guide to fossil collecting in Maryland, and publication is expected in FY 78. In addition, compilation of a revised geologic map of Washington County is virtually complete with publication due in FY 78. Coal basin mapping in Garrett and Allegany Counties, and the coal sampling program remain ongoing projects. Geologic mapping was initiated in the Cumberland 7.5 Quadrangle during FY 77, and will continue in FY 78.

COASTAL AND ESTUARINE GEOLOGY

This program is responsible for basic and applied geologic research concerning the sediments of the Chesapeake Bay bottom and erosion and deposition of sediments along the Bay margin, Atlantic Ocean shorelines, and nearshore environments. Program objectives are implemented through Shore Erosion Studies and the Chesapeake Bay Earth Science Study. Programmatic funding increased from \$92,518 in FY 76 to \$98,904 in FY 77.

Shore Erosion Studies involve special activities about shoreline and nearshore changes. In FY 77, these activities included continued measurements of shore erosion rates at one hundred sixty sites, photographic documentation of shoreline changes, continued beach and dune profiling of sites at Assateague State Park and Ocean City, inspection of state owned property, and initiation of a study of Ocean City bulldozed beach, and a study of the effectiveness of a novel "sand-grabber" breakwater at four Bay sites. Preparation of a report on beach dynamics along Janes Island State Park was begun.

The *Chesapeake Bay Earth Science Study* has a basic objective of providing a Baywide overview of the physical and chemical processes affecting the sediments of the Bay bottom.

The overview aims at providing earth science information needed for managerial and regulatory decision-making in activities such as dredging and dredge spoil disposal, oyster propagation, disposition of industrial wastes, and discharge of effluent from sewage treatment plants. In FY 77, geophysical profiles of more than 1,000 kilometers of the Bay bottom were run, 300 Bay bottom samples were obtained and laboratory analyses begun for grain size and sulfur content, and sediment and geochemical laboratories were established.

Reports and maps prepared for publication in FY 77 included: *Anne Arundel County Shoreline Condition Environmental Atlas*; I.C. No. 23, *Reconnaissance of the Severn River Sediments*; *Report on the Chesapeake Bay Earth Science Study*, an open-file report of the Maryland Geological Survey; and *Agnes in Maryland: Shoreline Recession and Landslides*, published in *The Effects of Tropical Storm Agnes on the Chesapeake Bay Estuarine System* by the Chesapeake Research Consortium, Inc. and the U.S. Army Corps of Engineers, November 1976.

DIVISION OF ARCHEOLOGY

The Division of Archeology is responsible for investigating Maryland archeology and for coordinating professional and amateur archeological activities in the state. It is charged with enforcing the regulatory provisions of the *Maryland Archeological Resources Act of 1968*. Information collected by the division is made available to the public and professional colleagues by the publications, lectures and open files. The division's budget increased from \$41,422 in FY 76 to \$51,891 in FY 77, mainly due to increased Special Funds.

Investigations were underway or completed for five studies. Field work at the multi-component historic and prehistoric Abells Wharf site in St. Mary's County was terminated and a report completed in Fall 1976. An investigation of aboriginal soapstone quarries in Maryland was initiated.

Investigations at a large Middle Woodland site near Chesapeake Bay at Rose Haven were carried out during May and June in cooperation with the annual field session in Maryland archeology sponsored by the *Archeological Society of Maryland, Inc.*, and supervised by Division of Archeology staff. Survey for archeological remains on Kinnaird Point and Swan Point in Kent County was carried out.

A preliminary archeological survey of the South River, Anne Arundel County, was completed. The objective of the study was to collect data on settlement pattern and subsistence, especially for the Middle Woodland period, and to develop a plan for further field research as well as for site preservation and/or salvage.

A cooperative agreement was completed with the *Maryland Department of Transportation* to conduct field reconnaissance and review of archeological resources affected by new transportation projects.

An agreement was initiated with Land Planning Services (Department of Natural Resources) to undertake field reconnaissance and to prepare cultural resource inventories and assessments of Department of Natural Resources lands.

MARYLAND ENVIRONMENTAL TRUST

The Trust's main activity is the encouragement of owners of rare or unique natural areas, productive farmland, large open spaces, waterfront, or scenic areas to establish conservation easements on their land to preclude the development of the property, while keeping it in private ownership in its natural or agricultural state.

**Maryland Environmental
Trust
Budget**

General Funds \$53,475

Maryland Environmental Trust solicited the gift of easements by writing directly to 4,500 landowners along the Chesapeake Bay and its tributaries. The Director also addressed many groups about easements. This effort included the distribution of the Trust's booklet — *Conservation Easements: To Preserve A Heritage*. Six thousand copies were sent to landowners, libraries, the Maryland General Assembly, County and State officers, and conservation organizations throughout Maryland and the United States. Ten thousand copies had been printed in 1974, 4,000 in 1976 and 2,000 copies of the second revised edition were printed in 1977.

The Environmental Trust was given eleven easements on 4,157 acres in ten counties; 3,751 acres are along the Chesapeake Bay. The Trust now is responsible for nineteen easements on 5,305 acres in twelve counties and Baltimore City. In FY 76 the Environmental Trust held easements on 1,148 acres. This represents a 360% increase in one year.

"Keep Maryland Beautiful" is MET's oldest activity. In 1977 Keep Maryland Beautiful distributed 60,000 promotional items such as litter baskets and bags, to state agencies, civic groups, and individuals.

MET has seven local committees in Worcester, Baltimore, Allegany, Wicomico, Howard, Somerset and Montgomery Counties. MET staff in 1977 helped to form the Howard and Somerset Committees. These committees, other local conservation groups, and county officials cooperated with MET on such issues as state critical areas, wetland hearings, anti-littering programs, used oil recycling, and farmland preservation.

NATURAL RESOURCES POLICE FORCE

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

Natural Resources Police Force Budget	
General Funds	\$ 159,106
Special Funds	1,282,515
Federal Funds	22,139
TOTAL	\$1,463,760

GENERAL DIRECTION

Headquarters Section

Plans and provides administrative support and services for the operational divisions, and includes a Communications Section. The Headquarters Section has a staff of fifteen uniformed and clerical personnel (6% of the total force) with a budget of \$225,871 (5% of the agency budget). Activities of the Headquarters Section are outlined in Table 27.

Police Academy

Is responsible for cadet, recruit, and in-service training of the uniformed personnel as well as various support activities to the operational divisions. With a staff of two uniformed (1% of the total force), and operating budget of \$49,347 (1% of the total agency budget), the activities of the Police Academy were carried out as are shown in Table 28.

Table 27. Natural Resources Police Headquarters Section Activities

	1976	1977	Change
Calls Received	9,221	22,363	+ 142%
Public Relations Details	209	414	+ 98%

Table 28. Natural Resources Police Police Academy Activities

	1976	1977	Change
Recruit Training	8,470	9,594	+ 13%
In-Service Training	504	639	+ 26%
Cadet Training	13,488	15,574	+ 15%
TOTAL STAFF HOURS	22,462	25,807	+ 15%

**Table 29. Natural Resources Police
Maintenance and Supply Section Activities**

	1976	1977	Change
Repair Job Orders	939	1,125	+ 19%
Supply Requisition	1,688	2,018	+ 19%

**Table 30. Natural Resources Police
Aviation Section Activities**

	1976	1977	Change
Hours Flown	165.2	169	+ 2%
Cases Made	12	62	+ 416%

**Table 31. Natural Resources Police
Inland Division
Field Enforcement Activities**

	1976	1977	Change
Arrests	2,088	2,088	None
Warnings	487	372	- 23.6%
Assists	631	1,586	+ 151.0%
Telephone Calls (received at office)	32,561	32,583	+ .7%
Telephone Calls (received at officers' home)	21,328	19,403	- 8.3%

Investigation Section

Warrants Served	35	117	+ 234.0%
Investigations	20	115	+ 475.0%

**Table 32. Natural Resources Police
Hunter Safety Program**

	1976	1977	Change
Instructors	542	573	+ 5%
Hunters Certified	6,352	8,285	+ 30%
Accidents	54	46	- 15%

Maintenance and Supply Section

Provides maintenance and repair service to the Natural Resources patrol boat fleet and associated equipment, and serves as a centralized supply facility which is responsive to sister agencies as well as to the police force. With a work force of ten men (5% of the total force), and a budget of \$176,876 (4% of the total agency budget), services were performed as shown in Table 29. This year showed a 19% increase in supply services to sister agencies. In addition, eighty-two patrol boats were hauled for major repairs.

Aviation Section

Provides aerial assistance for the Natural Resources Police and other agencies. With a staff consisting of two persons (1% of the total force), and a budget of \$39,990 (1% of the agency budget), services were performed as shown in Table 30

INLAND DIVISION

Field Enforcement

Field Enforcement is responsible for the enforcement of all laws and regulations pertaining to the protection of both game and non-game species of wildlife, including wild waterfowl and other migratory birds. In addition, it enforces the provisions of the *State Boat Act* on non-tidal waters of the state, and conducts investigations of criminal activities that surface during the performance of its primary mission. There are seventy-one employees (35% of the total force), with a budget of \$1,392,849 (33% of the agency budget). Table 31 outlines the activities of the Field Enforcement Section, with the Investigations section experiencing a marked increase in work load.

Hunter Safety Program

Provides formal training sessions and lectures throughout the state to promote safe hunting practices and outdoor recreation. Operating expenses for the staff of two (1% of the total force) amounted to \$30,173 (1% of the total agency budget). It should be noted that the bulk of the training program is carried out by a corps of 573 volunteer instructors. Table 32 shows the activities of the program.

MARINE DIVISION

Field Enforcement

Is responsible for the enforcement of all laws and regulations pertaining to the protection of natural resources within the tidal waters of the state. In addition, this section enforces the provisions of the *State Boat Act*, and conducts investigations of criminal activities occurring on the Chesapeake Bay and its tributaries. There are 132 employees (117 uniformed officers, 10 cadets and 5 clerical personnel, com-

prising 65% of the total force), with an operating budget of \$2,480,911 (55% of the total agency budget). Activities of the Marine Division Field Enforcement Section are shown in Table 33.

Accident investigations and general investigations experienced significant increases in FY 77. Direct damage from boating accidents amounted to \$311,672. Seventy-one percent of all cases assigned case numbers were closed out.

Boating Safety Education

Conducts a home study course designed to promote public safety and prevent boating accidents. A staff of two (1% of the total force) with a budget of \$75,622 (2% of the total agency budget) distributed 18,322 Basic Boating Courses, an increase of 3.6% over FY 76. Twenty-one schools used this course as a part of their curriculum. Boating Safety films were lent by this section's film library to public groups a total of forty-eight times during the year.

**Table 33. Natural Resources Police
Marine Division
Field Enforcement Activities**

	1976	1977	Change
Arrests	3,209	2,677	- 17.0%
Warnings	3,325	3,122	- 7.0%
Assists	1,726	2,252	+ 30.0%
Inspections	157,740	123,389	- 22.0%
Boating Accidents	109	219	+ 100.0%
Boats Involved	275	303	+ 10.0%
Stolen Boats	243	240	- 2.3%
Recovered Boats	121	174	+ 73.0%
Stolen Motors	98	156	+ 59.0%
Recovered Motors	22	60	+ 38.0%

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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