Georgia's Environment

Decades of Change

Environmental Protection Division
Georgia Department of Natural Resources
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Decades of Change

Contents

INTRODUCTION 1

FACTORS AFFECTING GEORGIA'S ENVIRONMENT 2

- Population Growth 2
- Changing Agricultural Practices 3
- Climate 3

FACTORS AFFECTING DNR/EPD 4

- Changing Values 4
- Changing Political Priorities 4
- Changing Role of Government 5

DECADES OF PROGRESS: 1960s–1990s 6

- Table 1. Protecting Georgia's Air 6
- Table 2. Protecting Georgia's Water 8
- Table 3. Protecting Georgia's Land 11

DECADES OF CHALLENGE: 2000s AND BEYOND 14

- Clean Air 14
- Clean and Plentiful Water 14
- Productive Land 15
- Cross-Media Approach 15
- Technology 16

CONCLUSION 16

Introduction

This report provides a retrospective overview of the changes to Georgia's environment; and the laws, regulations and programs designed to protect it.

During the last four decades, Georgia's environment has changed dramatically. In the 1960s, there were few air pollution controls on industrial and vehicle emissions, and several communities did not meet air quality standards for lead and particulate matter. The state's rivers and streams were heavily polluted from cities and industries with non-existent or inadequate sewage treatment and from poor mining, agricultural and development practices. In addition, the land was polluted by unregulated hazardous waste disposal and countless unregulated open solid waste dumps throughout the state.

Today, there are strict air quality controls for industrial facilities and vehicle emissions, and the state meets all national air quality standards except ozone in the metro Atlanta area. Ninety-nine percent of all municipal and industrial sewage receives adequate treatment, and of the nearly ten thousand miles of Georgia's rivers and streams assessed, approximately eighty percent fully or partially meet water quality standards. There are no longer any commercial or municipal dumps in Georgia, but 195 sanitary landfills in their place. Hazardous waste sites across the state have been identified and are undergoing cleanup.

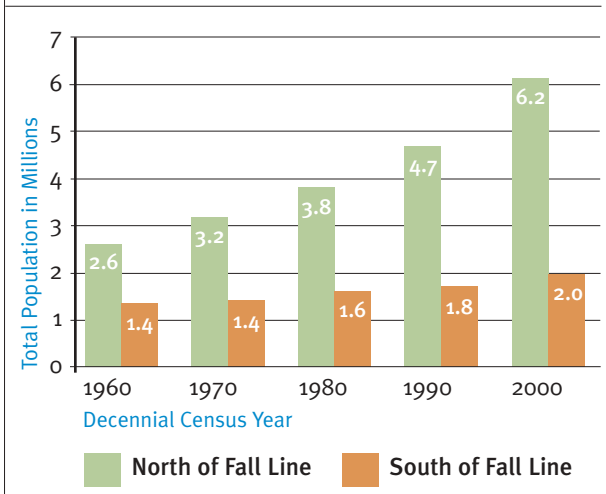
The state department responsible for protecting the environment also has undergone dramatic change. In 1972, Governor Jimmy Carter reorganized more than thirty state agencies to form the Department of Natural Resources (DNR). Today, the Georgia Environmental Protection Division (EPD) is one of seven DNR divisions, and has primary responsibility for enforcing twenty-three state and five federal environmental laws.

Nearly 900 associates work in EPD's seven branches and seven regional offices to help provide clean air, clean water, healthy lives and productive land to Georgia's citizens. EPD works to accomplish these goals by ensuring compliance with environmental laws and assisting others to do their part for a better environment.

The purpose of this report is to provide a retrospective overview of the changes to Georgia's environment; and the laws, regulations and programs designed to protect it. To begin, this report will briefly examine some of the independent factors influencing Georgia's environment and EPD. A series of tables will then summarize major milestones during the last four decades regarding the state of the environment, state and federal environmental legislation and the development of EPD/DNR programs. To conclude, the report will address current and future environmental issues, initiatives and challenges.

FACTORS AFFECTING GEORGIA'S ENVIRONMENT

Figure 1. Population Growth in Georgia
Source: U.S. Census Bureau



POPULATION GROWTH AFFECTS:

AIR QUALITY
More people drive more

WATER SUPPLY
More people use more water

WATER QUALITY
More people build more roads and buildings resulting in more wastewater and storm water runoff

LAND QUALITY
More people use more land resulting in habitat loss

POPULATION GROWTH

In 1960, Georgia's population was 4.0 million. Four decades later, the state's population more than doubled, with nearly 8.2 million residents in 2000. Georgia was the sixth fastest growing state in the U.S. during the 1990s, adding 1.7 million residents in the last decade alone. Georgia's growing population has had a definite impact on the natural environment.

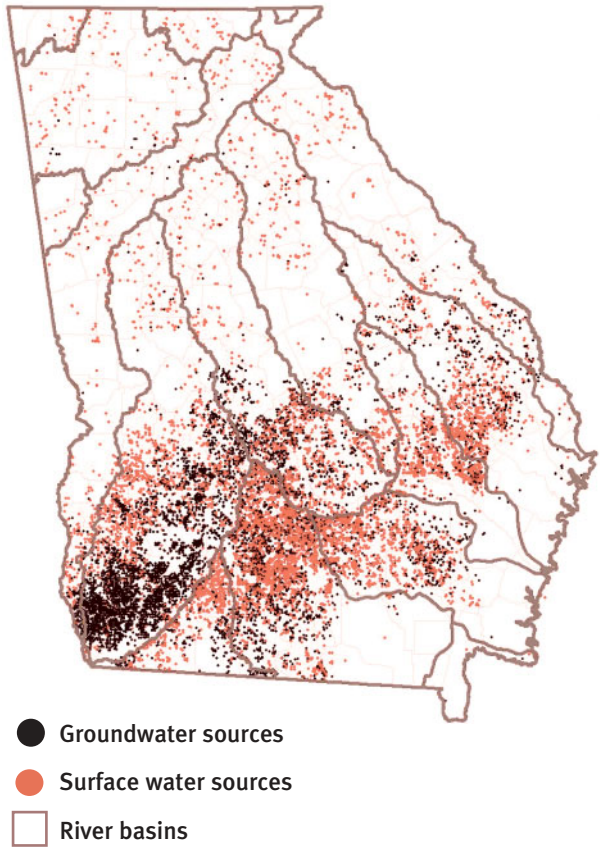
Residential, commercial and industrial development has directly affected natural resource areas and wildlife habitats by replacing natural cover with impervious surfaces like asphalt and concrete. These altered land uses adversely affect the quality of surface water. Rivers and streams are affected by erosion and sedimentation, storm water runoff and direct municipal and industrial discharges. In addition, groundwater quality is threatened by saltwater intrusion due to heavy water usage in the coastal counties of the state. Pumping in southeast Georgia has resulted in the main aquifer being drawn down enough to allow salty water to infiltrate the fresh water supply near Savannah and Brunswick.

Georgia's residents are not distributed evenly across the state, placing unequal stresses on the state's limited resources. The area north of the Fall Line—a physiographic boundary dividing the state into two parts—covers roughly the top third of the state. This region, which includes the metro Atlanta area, is home to approximately seventy-five percent of Georgians. The area south of the Fall Line covers about two-thirds of the state, but is inhabited by only twenty-five percent of the state's total population.

Growth and corresponding development also have contributed to concern and conflict over the state's limited water supply. The problem is simple: more people use more water. The once plentiful surface water sources in the northern part of the state are being reduced to meet demands for varied uses such as drinking water supply, industrial and commercial operations, residential landscaping, navigation and recreation.

Population growth indirectly affects the quality of Georgia's air, too. In large metropolitan areas, like Atlanta, residential development is often characterized by low density and singular land uses. This development pattern—often referred to as "sprawl"—in conjunction with inadequate public transportation, results in greater reliance on motor vehicles. As development grows more dispersed to accommodate a growing population, people drive more frequently and longer distances to reach their destinations. This increases the concentration of harmful vehicle emissions and contributes significantly to the formation of ground-level ozone and particulate matter. Ultimately, air pollution can have negative consequences on human health.

Figure 2. Permitted Irrigation Withdrawals in Georgia, 1993
Source: EPD Geologic Survey Branch



Changing Agriculture Practices

In 1960, there were virtually no irrigated farms in Georgia. In 2000, 21,400 irrigation systems were permitted on 2.2 million acres of land. Almost one-third of the water withdrawal permits in the state are issued for the 15-county area in the agricultural belt of the Lower Flint River Basin in southwest Georgia. EPD currently receives approximately seven hundred new irrigation permit applications each year. This significant increase in agricultural irrigation has improved crop yields during dry months and years, but also has had a dramatic effect on water resources in agricultural regions of the state.

Surface water sources are limited during dry summer months due to increased withdrawals and evaporation, so many farmers drill wells for irrigation. In southwest Georgia, increased groundwater pumping for agricultural irrigation has lowered the water table over large areas. A declining water table poses a serious threat to public and private water systems because it can cause shallower wells in the area to run dry.

Groundwater from the Upper Floridan Aquifer in southwest Georgia is important not only as a drinking water source and to support agricultural irrigation, but also for its vital function of discharging water to the Flint River and its tributaries. Current studies suggest that over withdrawing groundwater supplies may dry up the tributaries of the Lower Flint River Basin.

Climate

Climate can affect the environment significantly and unpredictably. Floods can threaten water quality by increasing erosion, sedimentation and pollution from storm water runoff in urban areas. The opposite climate extreme can be just as devastating. In Georgia, the most evident example of climate negatively affecting the environment is the current drought.

The drought, which began in May 1998, has lowered water levels in reservoirs, lakes and ponds; reduced flows in rivers, streams and springs; increased groundwater depletion and reduced groundwater recharge. During drought, water quality is negatively affected by increased temperature and salt concentrations, swings in pH, lower dissolved oxygen content and reduced ability to assimilate treated wastewater. Increased demand on water resources when water is scarce also increases the vulnerability of some fish, wildlife and plant populations. In addition, dust and other small particles that are normally stripped out of the air by rain can negatively affect air quality during drought.

Although Georgia's hot, sunny climate does not cause the state's air pollution problems, it contributes to them by providing the right conditions for ground level ozone to form. Ground level ozone forms in the air when certain pollutants—volatile organic compounds (VOCs) and nitrogen oxides (NOx)—are emitted in the presence of high temperature and bright sunlight. The higher the temperature and the more direct the sunlight, the more ozone is produced. That's why unhealthy levels of ozone usually occur during the summertime. Rain can clear the air of most pollutants, but rain also may result in the storm water washing pollutants from the air and land into rivers and lakes.

Temperature is not the only parameter that affects ozone concentrations. Other meteorological variables such as dew point, cloud cover, barometric pressure, and wind speed and direction can have an impact on air pollution. On hazy, hot and humid summer days, winds can carry air pollution from one area to another. As a result, ozone pollution originating in urban areas can extend into surrounding rural and forested areas. With little or no wind, however, pollutants that would normally disperse from their sources without building up to unsafe levels can become trapped in one area, resulting in unhealthy air pollution levels that can last longer than usual.

FACTORS AFFECTING DNR/EPD

Changing Values

During the past forty years, the environment has become a quality of life issue, and a core American value. In the 1960s, there was only one environmental advocacy group in Georgia, and the public was generally apathetic or uninformed about environmental issues. In 2001, there were more than one hundred environmental advocacy groups; and more than twenty-five of these organizations had full-time, paid staff. Georgia's citizens are better informed, more involved in environmental issues, and as a result, expect a higher level of service from EPD.

Due to increased attention to environmental issues at local, state and national levels, forward thinking businesses and local governments are much more pro-active and factor environmental concerns into their business plans. Environmental advocates (generally represented by the nonprofit sector), and industry advocates (typically representing private sector interests) are both acutely aware of and concerned with environmental issues, but they represent a significant range of interests and values.

Changing Political Priorities

The changing values of the last several decades have translated into changing political priorities as well, and legislators establish an agency's access to fiscal resources. In 1973—its first year of operation—EPD had 213 employees and an annual budget of $4.3 million. In 2001, EPD had approximately 850 filled positions and an annual operating budget of about $84 million.

Before 1973, there was little political interest in environmental issues, and as a result, there were few fiscal resources available for environmental programs. As public awareness and interest in environmental issues have grown during the last thirty years, so too have resources for the organizations responsible for protecting the environment.

Though EPD's budget and resources have increased along with inflation since the seventies, the rise has not always been steady. When public and political support for environmental protection has been strong, EPD's resources have generally increased. However, decreasing political support can affect EPD's budget also. In addition, external factors—such as the health of the state and federal economy—also affect budget decisions. EPD must work to maintain accountability and congruence with the public interest, foster productive relationships with various levels of government and business/industry, and represent the middle ground in the balance of widely varying interests.

EPD's revenue comes from two categories: government sources and other sources. Government sources include state appropriations, federal grants from the Environmental Protection Agency (EPA) and from other federal agencies like the Department of Transportation, Department of Energy, and the Department of the Interior. Intergovernmental relations are very important since EPD is dependent on state and federal government for funding.

Other fund sources include revenue from fees, permits, licenses, fines, contracts and other grants. In order to accommodate expected growth in EPD's workload and the continuing variability of government funding sources, attention is shifting to these other fund sources for long-term support of EPD's additional program needs. With EPD's fees and staff-to-population ratio among the lowest in the southeastern region, EPD cannot endure significant funding cuts. Therefore, new revenue generated from permit fees may be a reasonable way to reduce reliance on government funding.

Figure 3. EPD Budget and Positions, 1973–2001

Source: Office of Planning and Budget, DNR, EPD

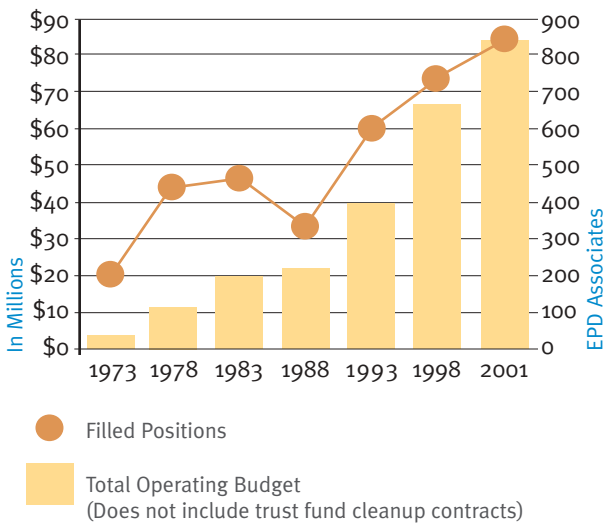


Figure 4. EPD Program Areas

1970s

Water quality, air, solid waste, mining, drinking water

1980s

Water quality, air, solid waste, mining, drinking water, water resources, safe dams, hazardous waste

1990s

Water quality, air, solid waste, mining, drinking water, water resources, safe dams, hazardous waste, underground storage tanks, scrap tires, hazardous sites

Changing Role of Government

During the past four decades, the role of government has changed in response to new expectations for the public sector. The public now demands greater accountability, more efficient use of resources and better service from all levels of government. As expectations grow and funds to carry out their missions become increasingly stretched, government agencies must establish new and creative ways to accomplish their goals.

This mandate to do more with less is clearly not a simple task. In an effort to address this complex responsibility, EPD is reorganizing, retraining and reallocating its resources under a new management system strategy called the Redeployment Initiative. This initiative seeks to decentralize activities and retreat from the traditional management strategy where statewide EPD activities were conducted from Atlanta offices.

Under the Redeployment Initiative, resources and responsibility will be redeployed to empowered, cross-trained regional staff that will facilitate compliance with environmental regulations at the local level. This new initiative will allow EPD to provide a higher level of service to its customers and build trust with its stakeholders in a more cost-effective manner. A redeployment pilot program has been underway since 1998, and statewide implementation is expected to be complete by 2003.

EPD has several other initiatives underway to improve its responsiveness to the public. Technology changes include a high-quality electronic information management system that will improve communication and allow universal access to an integrated database of environmental information, and significant website improvements. In addition, numerous stakeholder participation groups are currently working alongside EPD associates to address environmental issues across the state.

All of these efforts, collectively, will address the changing role of government and reflect the changing mission of EPD over the decades from strictly enforcement to compliance and public assistance.

DECADES OF PROGRESS: 1960s–1990s

Since the sixties, a great deal of progress has been made toward protecting Georgia's air, water and land resources. The following tables do not present complete lists, but instead summarize significant environmental conditions, state and federal legislative changes, and EPD/DNR programmatic changes during the last four decades.

air

Table 1. Protecting Georgia's Air

	Changes in Georgia's Environment	*Changes in State and Federal Laws*	*Changes at DNR/EPD*
1960s	• Few industries had any air pollution controls • Open burning of garbage was a common practice	• (1967) GA Air Quality Act enacted to create controls on dust, smoke, sulfur dioxide and open burning of wastes	• GA Dept of Health's Air Quality Control Board began controlling open burning of garbage and inventory of large industrial smokestacks • First air quality monitors were installed in industrial areas
1970s	• 1,500 industrial facilities lacked adequate air pollution controls • There were 2 municipal garbage incinerators in Georgia: neither met air quality standards • 7 cities did not meet air quality standards for dust, smoke, carbon monoxide and lead • Georgia had only 20 air quality monitors • There was no federal ozone air quality standard • There were no standards for air toxics • There were no standards or controls for volatile organic compounds or nitrogen oxides (precursor chemicals for ozone)	• (1970) Federal Clean Air Act amended to regulate air emissions from area, stationary and mobile sources • (1976) GA Radiation Control Act amended to establish statewide radioactivity monitoring network • (1977) Federal Clean Air Act amended to establish new goals for attaining national ambient air quality standards • (1979) GA Air Quality Act amended to include Inspection & Maintenance (I/M) Article to reduce vehicle emissions and control ozone and carbon monoxide in metro Atlanta	• (1972) DNR and EPD were formed • (1972-75) EPD issued air quality compliance schedules to 750 industries • (1976) Georgia became first state authorized by federal government to prevent deterioration of air quality in areas with clean air • (1979) EPD established its Emergency Response Team • (1979) DNR became the lead state agency in all peacetime radiological and hazardous chemical emergencies
1980s	• Entire state met air quality standards for dust and smoke particulates • Atlanta area met air quality standard for carbon monoxide • Atlanta area did not meet air quality standards for ozone		• (1982-88) EPD implemented measures to help Atlanta area meet ozone standard • (1983) EPD instituted procedures to control potentially toxic emissions for hundreds of chemicals • (1987) EPD began monitoring for EPA's new 10-micrometer standard for particulate matter • (1988) EPD implemented measures to limit sulfur emissions and control odor from pulp and paper mills

air

1990s

Changes in Georgia's Environment

- All industrial facilities had controls to comply with state air quality regulations
- Georgia's air met national standards for concentrations of all pollutants except ozone in metro Atlanta area
- Statewide average concentrations for carbon monoxide, nitrogen dioxide, sulfur dioxide, lead and particulate matter were either stable or improving

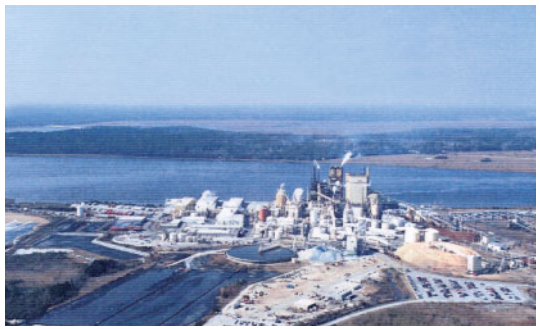
Changes in State and Federal Laws

- (1990) Federal Clean Air Act amended to address continuing national problems of acid rain, ground-level ozone, stratospheric ozone depletion and air toxics
- (1992) GA Motor Vehicle Emission I/M Act enacted to replace 1979 I/M article of GA Air Quality Act and provide for enhanced I/M program required by Federal Clean Air Act amendments
- (1992) GA Air Quality Control Act amended to incorporate many elements of the 1990 Federal Clean Air Act such as permitting and ozone, acid rain and toxics controls

Changes at DNR/EPD

- EPD controlled emissions of more than 400 toxic chemicals from more than 600 industries
- Georgia had stricter VOC regulations for the 13-county metro Atlanta area than all but three metro areas in other states
- EPD's air quality monitoring network routinely operated 100 stations
- (1996) EPD's Enhanced I/M Program launched in 13-county non-attainment area, including new contract with private company under Gov. Miller's privatization initiative
- (1997) EPD formed the Voluntary Ozone Action Program to reduce number of single-occupancy vehicle commuters in the non-attainment area during ozone season
- (1998) EPD implemented many new air quality controls inside and outside the 13-county ozone non-attainment area
- (1999) EPD required the 13-county ozone non-attainment area and 12 additional counties to sell only low-sulfur gasoline to reduce harmful emissions
- (1999) EPD's State Implementation Plan required stricter controls for industrial and power plant emissions
- (1999) EPD began monitoring for EPA's new 2.5-micrometer standard for particulate matter
- (1999) DNR Board adopted five-year EPD Budget Plan that included 110 new positions for 2000 and 2001

Inadequate air quality controls in the 1970s



Industrial air quality controls enforced by EPD in the 1990s

Table 2. Protecting Georgia's Water

	Changes in Georgia's Environment	*Changes in State and Federal Laws*	*Changes at DNR/EPD*
1960s	• 70% of all municipal sewage was discharged without treatment • 97% of all industrial wastewater was discharged without treatment • Many rivers downstream from major municipalities were heavily polluted and lacked enough oxygen for fish survival. Prominent examples were Savannah Harbor, South River and Chattahoochee River (Atlanta), Butler Creek (Augusta) and the Conasauga River (Dalton) • Portions of streams in the kaolin belt were milk-white from improper mining • Drinking water quality was essentially unregulated	• (1964) GA Water Quality Control Act enacted to authorize EPD to control water pollution	• GA Water Quality Control Board monitored streams, issued state permits, took limited enforcement actions and administered a modest federal construction grant program
1970s	• Local governments started (and many completed) construction of secondary wastewater treatment facilities • Many industries completed construction of wastewater treatment facilities • Water quality in many rivers improved, especially in terms of oxygen levels • Toxics in streams and lakes were not regulated • Public drinking water systems were safe, but tested for only 11 chemicals • Groundwater and surface water withdrawals were unregulated until the late 1970s	• (1972) Federal Water Pollution Control Act enacted to regulate discharges of pollutants and provide 75% matching state-administered grants to local governments to build adequate sewage treatment plants • (1972) GA Groundwater Use Act enacted to require permits for all Municipal & Industrial withdrawals of 100,000 gallons or more per day • (1974) Federal Safe Drinking Water Act enacted to establish national standards to protect drinking water • (1975) GA Erosion & Sedimentation Act enacted to prohibit siltation of state waters by land disturbing activities • (1975) GA Oil & Gas & Deep Drilling Act enacted to establish controls to prevent improper drilling • (1976) GA Radiation Control Act amended to establish statewide radioactivity monitoring network • (1977) Federal Water Pollution Control Act amended and renamed Federal Clean Water Act to establish surface water quality standards • (1977) GA Safe Drinking Water Act enacted to require permits for systems serving 25 or more people	• (1972) DNR and EPD were formed • (1972–74) EPD issued water quality compliance schedules to 50 industries • (1972) EPD started to regulate non-agricultural use of groundwater • (1974) EPD was the second state fully delegated by EPA to administer a water quality permit and compliance program • (1974) EPD created a construction grants program to award federal planning and construction grants to local governments for construction of wastewater treatment facilities. More than one billion dollars were awarded in the '70s and '80s, resulting in a dramatic improvement in water quality • (1977) EPD began requiring permits from all non-agricultural surface water users who withdraw 100,000 gallons or more per day • (1978) EPD's Accelerated Groundwater Program began evaluating the quality and quantity of groundwater resources • (1979) EPD established its Emergency Response Team

water

	Changes in Georgia's Environment	*Changes in State and Federal Laws*	*Changes at DNR/EPD*
1970s		• (1977) GA Water Quality Control Act amended to require permits for all non-agricultural surface water users of 100,000 gallons or more per day • (1978) GA Safe Dams Act enacted to provide for dam inspection and permitting • (1978) GA Building and Housing Code amended to require plumbing fixtures not exceed a certain rate of water use	• (1979) Georgia established a continuing cooperative agreement with the Federal Emergency Management Agency to assist with the implementation of the National Flood Insurance Program
1980s	• Most of Georgia's industries met existing water quality requirements • The majority of local governments met water quality requirements • The quality of water in many streams improved significantly due to new or upgraded wastewater treatment systems • Georgia's drinking water continued to be safe and monitoring was increased • The droughts of 1986 and 1988 radically reduced water availability in many communities	• (1984) GA Water Quality Control Act amended to eliminate phosphate detergents • (1985) GA Water Well Standards Act enacted to require licenses and controls for drillers to prevent groundwater contamination • (1987) Federal Clean Water Act amended to establish storm water permitting, control nonpoint pollution, require tighter toxics controls and change construction grants to state revolving loans for construction of wastewater treatment facilities • (1988) GA Groundwater Use and Water Quality Control Acts amended to require agricultural ground- and surface water users to obtain a permit for withdrawals of 100,000 gallons or more per day • (1989) GA Water Supply Act enacted to authorize state-funded water supply projects such as regional reservoirs • (1989) GA Comprehensive Planning Act enacted to require land-use plans that include controls to protect drinking water supply sources and wetlands • (1989) GA Erosion & Sedimentation Act amended to require undisturbed buffers along state waters	• (1982) EPD authorized by EPA to administer the industrial pretreatment program to ensure proper permitting and compliance of industrial dischargers to municipal sanitary sewer systems • (1982–88) EPD completed water use and availability reports for major river basins • (1984) EPD implemented the National Municipal Policy, requiring municipal wastewater treatment facilities to comply with final effluent limits • (1984) EPD began a comprehensive groundwater management program, including a monitoring network • (1987) EPD prepared a comprehensive water resources management strategy • (1989) EPD implemented stringent new water quality standards for bacteria and for 111 toxic pollutants based on EPA criteria • (1989) DNR began implementation of the regional reservoir program by conducting analysis of potential sites for the West Georgia Regional Reservoir

Unpermitted wastewater discharge in the 1970s

Water quality testing in the 1990s

1990s

Changes in Georgia's Environment

- 99% of all municipal and industrial sewage received adequate treatment
- Less than 275 river miles did not meet pre-1989 water quality standards
- 671 river miles previously listed as impaired now met water quality standards
- Oxygen levels in all of Georgia's major streams were at healthy levels for fish
- There were strict water quality standards for 132 harmful chemicals
- Public drinking water supplies continued to be safe, and were tested for 82 toxic chemicals
- All but 3 of the state's 2,470 public drinking water systems met state and federal standards for harmful chemicals
- The drought beginning in 1998 resulted in all-time record lows for ground- and surface water sources across the state

Changes in State and Federal Laws

- (1990) GA Water Quality Control Act amended to require correction of all combined sewers (this affected Albany, Atlanta, Augusta, Cedartown, Columbus and Rome)
- (1990) GA Building and Housing Code amended to require ultra low-flow plumbing standards for new construction and renovations
- (1992) GA River Basin Management Planning Act enacted to require river basin management plans on a rotation schedule for all major river basins
- (1993) GA Water Quality Control Act amended to give EPD authority to regulate sludge disposal

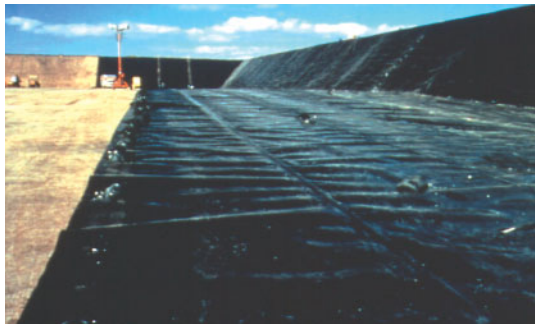
Changes at DNR/EPD

- (1992–97) GA, FL, AL and Army Corps of Engineers partnered to determine future demands on water from the ACT and ACF river basins, and to develop strategies for meeting water needs while protecting natural ecosystems
- (1992) EPD began requiring storm water discharge permits for certain industrial activities, construction sites and municipal storm sewer systems
- (1994) EPD began preparing Wellhead Protection Plans for all 1,421 locally operated water-supply wells/springs
- (1994) EPD began requiring land application of municipal sludge per EPA
- (1995) EPD completed issuance of more than 15,000 grand-fathered agricultural water withdrawal permits
- (1995) EPD launched a comprehensive program to increase the number of water quality monitoring sites across the state on a basin-by-basin rotation
- (1997) GA, AL and FL legislatures and Congress established interstate water compacts between GA and AL for the ACT river system, and GA, AL and FL for the ACF
- (1997) EPD adopted an interim strategy in 24 coastal counties to protect the Upper Floridan Aquifer from saltwater intrusion
- (1998) EPD implemented its Zero Tolerance Policy requiring enforcement actions for all sanitary sewer system spills/effluent limit violations from wastewater facilities
- (1998) EPD implemented the Sound Science Initiative: a comprehensive groundwater resource investigation program in 24 coastal counties
- (1998) EPD developed a comprehensive state groundwater management and protection plan
- (1999) EPD implemented a river basin permitting strategy to review and permit all dischargers with Total Maximum Daily Load evaluations and new waste load allocations
- (1999) DNR established comprehensive permitting requirements for concentrated animal feeding operations
- (1999) Nearly 10,000 miles of Georgia's rivers and streams were monitored to assess water quality
- (1999) DNR Board adopted five-year EPD Budget Plan that included 110 new positions for 2000 and 2001

Table 3. Protecting Georgia's Land

	Changes in Georgia's Environment	*Changes in State and Federal Laws*	*Changes at DNR/EPD*
1960s	• Waste disposal of all types was virtually uncontrolled • Open burning of garbage at dumps was a common practice • All surface mining was conducted without environmental controls or reclamation of land afterwards and approximately 20,000 acres of previously mined land were abandoned	• (1968) GA Surface Mining Act enacted to allow regulation of mining and reclamation of mined land	
1970s	• There was only 1 sanitary landfill in Georgia, and 400 municipal open dumps • There were 2 municipal garbage incinerators in Georgia: neither met air quality standards • There were no controls on hazardous waste: virtually all hazardous waste was mixed with municipal garbage or dumped into unlined pits or lagoons at industrial sites	• (1972) GA Solid Waste Management Act enacted to regulate waste disposal • (1975) GA Erosion & Sedimentation Act enacted to prohibit siltation of state waters by land disturbing activities • (1976) Federal Resource Conservation & Recovery Act (RCRA) enacted to regulate the generation, transportation, treatment, storage and disposal of hazardous waste • (1979) GA Hazardous Waste Management Act enacted to institute and maintain a comprehensive state-wide program for the management of hazardous waste	• (1972) DNR and EPD were formed • (1973) EPD began permitting existing solid waste disposal sites, requiring daily cover at landfills and closing open burning dumps • (1974) Georgia implemented a state environmental grants program to help local governments construct and improve water, sewer and solid waste facilities • (1979) EPD established its Emergency Response Team • (1979) EPD became the lead state agency in all peace-time radiological and hazardous chemical emergencies

Open burning dump in the 1970s



Lined municipal solid waste landfill in the 1990s

1980s

Changes in Georgia's Environment

- All municipal and commercial open dumps were eliminated
- 195 permitted sanitary landfills were in operation
- All industries were required to cease ongoing land disposal of hazardous waste
- In 1988, Georgia was the first state to eliminate land disposal of hazardous waste in compliance with federal law
- 100 facilities needed hazardous waste treatment, storage or disposal permits
- As much as 40 million tons of hazardous waste was generated annually in Georgia

Changes in State and Federal Laws

- (1980) Federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund) enacted to provide authority to respond to hazardous substance releases
- (1981) GA Hazardous Waste Management Authority Act enacted to study need for a possible state-owned hazardous waste management facility
- (1984) Federal RCRA amended to form the Hazardous & Solid Waste Amendments requiring phased-out land disposal of hazardous waste
- (1985) GA Surface Mining Act amended to raise maximum bonding rate for reclamation from $100/acre to $2,500/acre and to allow review of bonding every 5 years
- (1986) Federal RCRA amended to regulate underground storage tanks (USTs) storing petroleum products and other hazardous substances
- (1986) Federal CERCLA amended to form the Superfund Amendments and Reauthorization Act (SARA) to administer the Superfund program
- (1988) GA Underground Storage Tank Act enacted to establish statewide program for management of regulated petroleum and hazardous substances stored in USTs and to establish the Georgia Underground Storage Tank (GUST) Trust Fund to assist with cleanup costs

Changes at DNR/EPD

- (1980) EPD implemented the first comprehensive state hazardous waste management regulations
- (1980) EPD initiated a comprehensive hazardous waste reduction, monitoring, enforcement and permitting program
- (1982) EPD permits began requiring stringent controls on hazardous waste managed on site and corrective actions in areas of historical contamination
- (1986) Georgia became the first state fully authorized by EPA to implement its own hazardous waste management program
- (1986) EPD entered into an agreement with members of the Georgia China Clay Producers Association to reclaim or include in permitted acreage of new mines at least 80% of orphaned lands
- (1989) Georgia became the first state in the nation to issue or deny permits to all existing hazardous waste facilities
- (1988) EPD's Underground Storage Tank Management Program (USTMP) established to regulate operation of UST systems and require leak cleanup
- (1988) EPD's USTMP began managing Georgia Underground Storage Tank (GUST) Trust Fund to aid eligible UST owners/operators with costs of cleaning up petroleum leaks

Clinch County hazardous waste site in 1997

Clinch County hazardous waste site in 2000 after cleanup

1990s

Changes in Georgia's Environment

- 95% of all municipal solid waste was disposed in lined landfills; the rest was disposed in permitted unlined landfills or incinerated
- Many local government solid waste landfills were nearing capacity due to unprecedented growth and development
- More than 20 years of new landfill capacity was permitted statewide
- Landfills with potential groundwater contamination were identified, and monitoring activities were initiated
- Nearly 5 million scrap tires had been identified in piles across Georgia
- A large stockpile of 2-3 million scrap tires caught fire in Palmetto, Georgia
- No hazardous waste was legally buried anywhere in Georgia
- The total amount of hazardous waste generated in Georgia was reduced by 73% from 1980s levels to about 10 million tons
- The hazardous site inventory identified 426 sites: investigation and cleanup began at many of those sites
- More than 70 sites were removed from the hazardous site inventory
- More than 8,500 leaks from regulated USTs were identified, and approximately 4,000 of those leaks were cleaned up
- Of 21,100 active UST facilities, more than 9,600 older facilities were closed
- All surface mines and mineral processing plants operated under permit
- 15,185 acres of previously mined land were reclaimed

Changes in State and Federal Laws

- (1990) GA Comprehensive Solid Waste Management Act amended to enhance the state's ability to reduce and regulate solid waste
- (1991) Federal RCRA Subtitle D enacted to require all new municipal landfills constructed after 1993 to have a liner and leachate collection system
- (1992) GA Hazardous Site Response Act (HSRA) enacted to reduce generation of hazardous waste and authorize clean up of hazardous sites with solid and hazardous waste fees
- (1992) GA Comprehensive Solid Waste Management Act amended to establish Scrap Tire Management Program (STMP) and Solid Waste Trust Fund (SWTF) to fund preventive, corrective and emergency actions
- (1993) Article 8 of GA Comprehensive Solid Waste Management Act enacted to establish the Pollution Prevention Assistance Division (P2AD) of the DNR to provide incentives for voluntary reduction of pollutants through improved manufacturing processes
- (1994) GA Underground Storage Tank Act amended to require annual registration of regulated USTs and to make it a violation to place regulated substances in USTs without proof of annual tank registration

Changes at DNR/EPD

- (1991) EPD was third state in nation to receive EPA approval for its UST Management Program
- (1991) EPD began receiving funds from federal Leaking Underground Storage Tank (LUST) Trust Fund to clean up UST sites with unknown, unable or unwilling owners
- (1991) EPD began permitting new municipal solid waste landfills to meet new liner & leachate collection requirements
- (1991) EPD began collecting data for groundwater monitoring and methane gas from more than 300 landfills
- (1993) DNR's Pollution Prevention Assistance Division (P2AD) was created
- (1993) EPD began compiling data to estimate the amount of waste being generated and recycled in Georgia
- (1993) EPD established HSRA program to identify, investigate and clean up old hazardous sites
- (1993) EPD established Scrap Tire Management Program to track scrap tires from point of generation to final point of disposition (recycling)
- (1993) EPD began requiring all new municipal landfills to have a liner and leachate collection system
- (1994-2000) EPD changed focus from abatement of illegal scrap tire piles to comprehensive waste management strategy
- (1994) EPD published first annual hazardous site inventory with 279 sites identified
- (1994) EPD began requiring investigation and cleanup of hazardous sites by responsible parties, and initiated a statewide cleanup of orphan sites with Hazardous Waste Trust Fund
- (1997) EPD began requiring buffers for inert landfills
- (1998) EPD required closure of USTs which could not be upgraded and did not meet first federal upgrade deadline for new tank requirements
- (1999) DNR Board adopted five-year EPD Budget Plan that included 110 new positions for 2000 and 2001

DECADES OF CHALLENGE: 2000s AND BEYOND

Since it was created in 1972, EPD has developed numerous programs that include monitoring, planning, permitting, compliance assistance and enforcement activities. All of these programs have had a positive impact on Georgia's environment. Much progress has been made during the last four decades in controlling pollution that comes directly from identifiable and stationary sources, such as a specific industry or facility. This type of pollution is called point source pollution.

The greatest challenges for the new millennium will be in addressing the numerous and often conflicting demands on Georgia's limited natural resources, and in controlling pollution from nonpoint sources.

Nonpoint sources include storm water runoff, erosion and sedimentation from altered land uses, mobile air pollution from sources like automobiles, and littering and dumping by people. This type of pollution can cause significant damage to the environment and is much more difficult to eliminate and mitigate because it can seldom be traced to a single source or responsible party. Point sources are regulated by a few thousand EPD permits, but millions of Georgians create nonpoint source pollution.

Clean Air

Ground-level ozone has been and will continue to be a serious environmental concern in Georgia. Thirteen counties in the metro Atlanta area have been designated as ozone non-attainment areas. In 2000, EPD enhanced its Inspection and Maintenance Program to require vehicle emissions testing every year in the 13-county non-attainment area. Attainment of the 1-hour ozone standard is projected for 2004.

In 1997, EPA established a stricter ozone standard of 0.08 parts per million (ppm) over an 8-hour period. This will probably result in the designation of Augusta, Macon and Columbus, plus some additional counties in the Atlanta area, as non-attainment areas. EPD has begun preparing for the new standard by increasing monitoring, preparing emissions inventories, and working with local governments on transportation planning. In addition to these initiatives, focus will be shifted to the need for cleaner vehicles and educating the public about air quality issues and the importance of reducing vehicle miles traveled per person.

In 1997, EPA adopted a much more stringent national standard for particulate matter (PM-2.5). Rules for the PM-2.5 standard are still pending, but preliminary data indicate that essentially the entire state, and much of the nation, will not meet the stricter standard. EPD began monitoring for the new standard in 1999, and will develop a State Implementation Plan that strives to attain the PM-2.5 standard. In addition to addressing these stricter new standards for ozone and particulate matter, EPD also will begin to increase monitoring and control of air toxics in addition to the six national ambient air quality standards traditionally monitored.

Clean and Plentiful Water

Georgia's water quality has improved significantly, but there is still much work to be done. In the current decade, control of nonpoint sources of water pollution, including reform of erosion & sedimentation control, will be a priority.

In 2000, EPD issued a rigorous general permit for storm water discharges from construction sites greater than five acres as an important step toward controlling nonpoint source pollution. In areas where water quality standards are not met consistently, EPD will continue establishing total maximum daily loads (TMDLs) and requiring local plans to protect water quality in Georgia's rivers, lakes and estuaries. In addition, water quality monitoring and compliance activities will continue across the state.

In the coming years, maintaining adequate water supplies to support multiple uses will become an even greater challenge with continued population growth. Water allocation issues have been on the forefront in recent years, and will continue to be front and center in the foreseeable future. In December 2000, a tentative agreement—effective though the year 2030—was reached between Alabama and Georgia regarding the Alabama-Coosa-Tallapoosa (ACT) river system. But Alabama, Florida and Georgia are still negotiating the Apalachicola-Chattahoochee-Flint (ACF) compact.

Also in 2000, the Georgia Flint River Drought Protection Act was enacted to ensure that the Flint River maintains adequate flows to support fish and wildlife during times of severe drought. Current research, expected to be complete in 2005, will provide more information on the impacts of agricultural water withdrawals on Flint River flows. This information will be used to develop a sustainable water use plan for southwest Georgia.

EPD will continue to increase its involvement in water resources management and planning. Many of these initiatives will involve diverse groups of participants working together with EPD to resolve common concerns and accomplish shared goals. In 2000, DNR started working with stakeholder groups to develop a comprehensive statewide drought management plan.

In 2001, SR142 created the Joint Comprehensive Water Plan Study Committee to study water resource issues; consider existing policies, laws, rules, and programs; and recommend a process and schedule for preparing a comprehensive statewide water plan. The committee's recommendation will include a directive to prepare a state water plan that recognizes and reflects the links among population growth, land use, healthy aquatic communities and sustainable quantities of water for multiple purposes.

Also in 2001, SB130 created the Metropolitan/ North Georgia Water Planning District. This planning district consists of 27 appointed board members and is responsible for preparing water supply, wastewater and watershed management plans for 16 counties in metro Atlanta.

In addition to these planning initiatives, EPD will become increasingly involved in DNR's development of statewide water conservation programs and policies.

During the last several decades, EPD has concentrated program goals on permitting water withdrawals, but new initiatives will focus on water consumption. In the coming years, EPD and DNR will focus on educating the public about water conservation, and work with local governments and industries to coordinate water conservation activities and re-use initiatives that will reduce per capita consumption.

It is apparent that if streamflows adequate to support aquatic life are not preserved, the state's ability to meet its other priorities is in jeopardy. Georgia must focus on preserving water resources for future generations. To do this, the state must manage water better as it grows.

Productive Land

Just as growth and development have negatively impacted air and water quality, they also have compromised the quality of Georgia's land. In order to maintain, improve and protect the state's land resources, EPD will continue its hazardous and solid waste monitoring, compliance assistance and enforcement activities. During the six-year period beginning in 1994, EPD identified 8.5 million scrap tires in more than 543 dumps across the state. By 2001, EPD enforcement and compliance programs reduced this number to 340,000 tires at 78 dumps.

Currently, EPD ensures that the eight million scrap tires generated each year in Georgia are reused or recycled. These and other recycling initiatives for hazardous and solid wastes will become increasingly important in the coming years. Cleanup of leaking underground storage tanks (USTs) and hazardous waste sites around the state will continue, while new programs focusing on pollution prevention will help reduce the amount of solid and hazardous wastes generated in Georgia.

With continued population growth, environmentally sound development patterns will become an essential component of land protection. Smart growth patterns for regional development will lessen the environmental impacts from urban sprawl. EPD also will work with public and private sector interests to conserve greenspace and tie land use decisions to protection of air quality and water quality.

Cross-Media Approach

A cross-media approach to environmental protection considers the varied environmental impacts of any action. For example, storage of hazardous wastes can have an impact on land, water and air.

In the past, Georgia's environmental programs concerned with land, water and air protection functioned relatively independently of one another. Environmental protection programs in the coming years, however, will focus increasingly on a cross-media approach and broad-based initiatives that encourage information sharing and cooperative efforts. This new approach will be most apparent in two areas: land use and pollution prevention.

In the past, local governments based land use decisions on a multitude of factors such as zoning ordinances, business and economic considerations and community priorities, but rarely considered the full impact on natural resources. In order to continue the environmental progress of the past decades, however, land use decisions must be based upon consideration of all environmental impacts. This new approach to decision-making will involve a new type of relationship between government and landowners.

Pollution prevention, which strives to avoid creating waste, has contributed significantly to environmental progress in Georgia. This is because reducing the amount of waste generated in Georgia effectively reduces the amount and severity of threats to the state's natural resources. The importance of pollution prevention will grow steadily as cost-effective manufacturing methods are developed to reduce water and energy use, air pollutants, solid wastes and wastewater.

Technology

Technology has played an important role in improving and protecting natural resources in recent years, and new technology will contribute significantly in the coming decades. Some of these improvements include scrubbers, traps and catalysts that remove additional pollutants from smokestacks and tailpipes; wastewater treatment technologies that remove pollutants at much higher levels; water reuse and recycling initiatives that decrease waste and prevent pollution; and composite-lined landfills that are capable of monitoring and treating leaks. Businesses, industries and local governments in Georgia have spent billions of dollars implementing new technology, and they too should be commended for their contributions to environmental protection.

CONCLUSION

This report has demonstrated that four decades of significant environmental progress have been made, but that decades of challenge lie ahead. Progress can be attributed to increasing public interest in environmental issues; numerous state and federal environmental laws that have been enacted and amended since the sixties; environmental protection programs that have been successfully implemented by EPD since the division was formed in the early seventies; new technology that protects and improves the quality of natural resources; and thousands of pollution control actions initiated by Georgia's local governments, businesses and citizens.

All of this progress has been made in spite of independent factors that affect the environment and over which EPD has no control, such as population growth, economic forces and climate. In addition, this progress has been made in spite of other factors that affect EPD's mission and resources such as changing values, political priorities and public sector roles. The physical natural resource environment and the figurative environment in which EPD operates have changed significantly, and EPD has changed and responded to both.

EPD provides a public good. According to economic theory, a public good is characterized by "non-exclusion in supply"—meaning that it is not possible to exclude anyone from receiving its benefits; and "non-rivalry in consumption"—meaning that one person's enjoyment cannot diminish another's. Only a few benefits can truly be classified this way; but clean air, clean water and productive land certainly fit the bill. EPD's mission to protect this public good generally receives wide support because maintaining and improving the environment is difficult and costly in terms of required resources.

Environmental protection also has a generational effect because current actions may have a greater impact on future generations than on the current population. This unique element requires a long-term orientation from EPD.

The environmental challenges that remain are primarily attributable to population growth, and the long-term solutions will involve everyone. The public has clearly identified that environmental quality is an important quality of life issue, but at the same time has mandated that government be more responsive, efficient and effective. EPD's mission benefits all Georgians because it protects the air we all breathe, the water we all drink, and the land on which we all stand. Therefore, EPD and all Georgians must share responsibility and work together toward achieving the same positive goal of protecting the state's natural resources for current and future generations.

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