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The Land section of this report focuses on commercial land activities such as mining, land preservation and mitigation programs, and waste management activities to manage hazardous and municipal waste and redevelop polluted lands to restore them to productive uses.

Mining

North Carolina has a wealth of mineral resources, including aggregate (sand, gravel and crushed stone) to stone (granite, various metamorphic rocks and limestone) to industrial minerals such as phosphate, high-purity quartz, gemstones, glass sand, garnet, roofing granules, feldspar, mica, refractory minerals, bricks and peat. These resources are mined from the almost 800 permitted mines covering 113,000 permitted acres in the state. The area permitted for mining represents less than 4/10th of one percent of the state's 48,000 square miles.

Mines in North Carolina are required to carry a bond so that the state can reclaim the mine site if the mine operator declares bankruptcy or fails to reclaim the site. During the last 11 years, an average of 1,000 acres per year has been reclaimed and released from bond. The highest number of acres reclaimed and released was 1,793 acres in 2010. During FY 2010-11, DLR received 683 complaints and conducted 1,106 mining inspections. As a result of those inspections, 37 operators were cited with Notices of Violation for mining without a permit, 28 received Notices of Violation of their permit and 29 received letters of deficiencies. Only seven cases were not voluntarily resolved and referred to enforcement.



Land Conservation

DENR's land conservation initiatives are led by the Office of Conservation, Planning and Community Affairs. As part of these efforts, the office developed a Conservation Planning Tool to streamline the process of identifying and prioritizing the areas in North Carolina's landscape that are essential for conservation. The Conservation Planning Tool consists of statewide assessments and maps developed by the N.C. Natural Heritage Program (NCNHP) to identify, evaluate and prioritize essential high quality natural resources required to maintain healthy and sustainable ecosystems. This analysis pinpoints areas that are already protected as well as those areas in the landscape that represent "gaps" in a functional ecosystem network. Assessments of the state's important resources are conducted using the best available, most current data and information on biodiversity and wildlife habitat, forestry and farmland, water resources and open space and conservation lands.

In 1998, the General Assembly established a goal to conserve an additional million acres during the next 10 years. In that time, more than 683,000 acres were protected by DENR and its partners in the land conservation community. While North Carolina did not meet the goal to protect an additional million acres by Dec. 31, 2009, tremendous progress was made, increasing the rate of land protection far beyond what it had been, during a period that included two economic recessions and limited federal support. Since 2009, the rate of land conservation, whether for natural or agricultural uses, has continued to decline. However, the state continues to work on protection of key parcels that are critical for a variety of purposes including riparian or military installation buffers, or wildlife habitat, water quality and recreation, along with agricultural protection.

Development and maintenance of the North Carolina state parks system is another land conservation program. The state parks system exists for the enjoyment, education, health and inspiration of citizens and visitors. Residents and visitors made more than 14 million visits to North Carolina state parks in 2010 - the second highest level of attendance ever recorded.

The mission of the state parks system is to conserve and protect representative examples of the natural beauty, ecological features and recreational resources of statewide significance; to provide outdoor recreational opportunities in a safe and healthy environment; and to provide environmental education opportunities that promote stewardship of the state's natural heritage. The park system manages more than 213,000 acres, including 35 state parks, four recreation areas and a system of state natural areas. Since 1994, the Parks and Recreation Trust Fund (PARTF) has been used to acquire 18,622 acres of land for state parks. PARTF funds used in conjunction with at least one other funding agency have preserved an additional 37,616 acres.

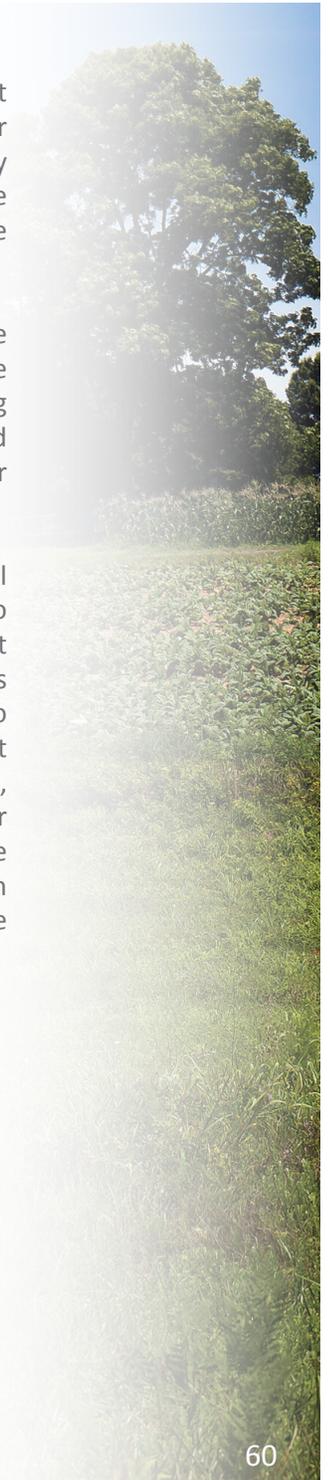


The state park system's determined conservation efforts have resulted in highly diverse landholdings throughout the state. These diverse landholdings provide refuge for many plant and animal species and function as outdoor laboratories and research opportunities in a variety of disciplines such as botany, geology, zoology, ecology and archaeology/anthropology. Parklands provide settings for scientific studies ranging from simple descriptive inventories to complex, ecosystem-scale analyses. Over the last decade several hundred researchers have conducted research in North Carolina state parks.

The Natural Heritage Trust Fund, Clean Water Management Trust Fund and North Carolina state parks system have undertaken land acquisition projects together to achieve common goals. In 2010, these groups contributed more than \$16.7 million to add more than 4,800 acres to the North Carolina state parks system. This public funding was used as leverage to raise more than \$11 million in private donations and federal grants. Many of these land acquisitions are in nationally significant natural heritage areas and will help provide recreational opportunities for residents while protecting water quality, and providing plant and animal habitat.

The Division of Coastal Management preserves coastal habitats with the N.C. Coastal Reserve (NCCR) & National Estuarine Research Reserve (NERN) program. The N.C. General Assembly created this program in 1989 to acquire, improve and maintain undeveloped coastal land and water areas in a natural state. Twenty years later, that seemingly simple act of legislation has led to the preservation of more than 41,000 acres of unique environments on 10 coastal reserve sites along the entire length of our coast. These undeveloped natural areas are vital to continued fishery and wildlife protection, water quality maintenance and improvement, aesthetic enjoyment

and public trust rights such as hunting, fishing, navigation and recreation. Such land and water areas are necessary for the preservation of state estuarine areas, constitute important research facilities and provide public access to waters of the state.



Land Use Planning

As North Carolina grows in population, it will be increasingly necessary to coordinate long-range planning activities among different entities to preserve important land resources and to promote compatible land uses. DENR has created or participated in three different groups that lead and collaborate on these efforts. The department is a founding member of the Southeast Regional Partnership for Planning and Sustainability (SERPPAS). SERPPAS promotes better regional collaboration in making resource-use decisions. SERPPAS includes the states of North Carolina, South Carolina, Georgia, Florida and Alabama. SERPPAS works to prevent encroachment around military lands, encourages compatible resource-use decisions and improves coordination among regions, states, communities and military services.

The N.C. Working Lands Group, established by NCDENR in partnership with the U.S. Department of Agriculture, promotes a long-term working relationship between the U.S. Department of Defense (DoD) and state agencies. The purpose of the North Carolina Working Lands Group is to create and implement an integrated strategy to sustain natural resources, land use and military operations and training that is economical and achievable. The group emphasizes conservation and compatible use of lands and waters critical to North Carolina's environmental health, economic strength and national defense. The group's mission is to maintain a collaborative partnership that uses leveraged resources to protect, preserve, enhance and sustain farms, forests, ranch lands and working waters in a manner that ensures mutual sustainability of economic, environmental, natural resource, cultural and national defense missions while creating net multiple benefits to all partners.

Finally, DENR led the establishment of the North Carolina Commanders' Council to deal with the challenges of compatible land use and development encroachment on military installations and training areas. The council, and its products, provide the means for North Carolina's military installation commanders to achieve greater shared awareness and understanding, and more compellingly speak with a "single voice" on common and complementary military/operational issues to our state government and regional partners (both internal and external to North Carolina's military installations).

Land Development and Wetland Impacts Mitigation

Urbanization, economic development and the development of physical infrastructure such as roads can negatively impact the size and number of wetlands in North Carolina. The objective of the Ecosystem Enhancement Program (EEP) is to compensate in an efficient and effective manner for wetland or stream impacts that are unavoidable because of land development or transportation infrastructure projects.





Founded in statute in 2003, EEP maintains more than 580 projects statewide, with more than 600 miles of streams, 30,000 acres of wetlands and 1,200 acres of streamside buffers having been conserved, restored or enhanced, and with 95 percent of all projects successfully meeting regulatory criteria. EEP also has helped to preserve more than 50,000 acres of natural areas statewide for future generations.

Customers in EEP's four separate in-lieu fee mitigation programs have included more than 1,400 homeowners and a roughly equal number of commercial, industrial and retail clients, as well as schools, churches and the military. The North Carolina Department of Transportation (NCDOT) is the largest customer for compensatory mitigation. Not a single NCDOT road project has been delayed since 2003 because of a lack of mitigation,

which has helped move forward more than \$8 billion in transportation projects. EEP's funding is receipt-based and the initiative receives no general fund appropriations. Customers use EEP on a voluntary basis for their mitigation needs.

A unique characteristic of the initiative is its commitment to offset impacts from development before the impacts occur, meeting concerns from environmental organizations and state and federal regulatory agencies about lag time that can occur between an impact to a stream or wetland and the required mitigation of the damage. EEP has achieved nationally unprecedented levels of advance mitigation to address impacts from development projects proactively.

Waste Management

In North Carolina, as in all states, a number of properties have been contaminated by petroleum products, solvents, pesticides and other environmentally harmful and toxic substances. Much of the contamination is a legacy of activities -- both public and private -- that occurred before the adoption of state and federal environmental standards. In many cases, soil and groundwater contamination resulted from waste disposal, including trash collected by local governments for disposal and chemicals used in manufacturing. Leaking petroleum underground storage tanks deteriorated over time and leaked petroleum product into the soil and groundwater. These contaminated sites can pose a threat to both public health and the environment, particularly when contamination affects drinking water supplies. The presence of environmental contamination also inhibits the sale and redevelopment of property, hindering economic development.

A number of DENR programs assess, remediate and redevelop contaminated property. The Division of Waste Management (DWM) implements most of those remediation programs and regulates all forms of waste disposal. DWM and the Division of Environmental Assistance and Outreach also provide technical assistance and incentives related to recycling and waste reduction to businesses, industries, local governments and citizens.



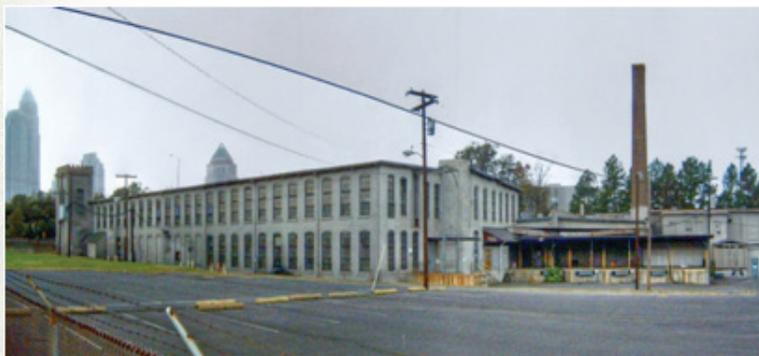
Brownfields Program

Brownfields are abandoned, idled or underused properties where environmental contamination hinders redevelopment due to concerns about environmental liability. The Brownfields Property Reuse Act removes barriers to redevelopment by protecting prospective developers from liability for contamination they did not cause. The N.C. Brownfields Program, in partnership with the U.S. Environmental Protection Agency (EPA), has been successful in revitalizing and promoting safer use of brownfields properties across the state. The program also supports other community goals, such as preservation of green space and reduction of urban and suburban sprawl, making urban development more economically efficient. For each brownfield property redeveloped, a green space is saved.

Since the Brownfields Program began in 1997, 204 properties (representing a total of 2,775 acres) have received completed redevelopment agreements. The remediation of these properties has resulted in approximately \$8.2 billion in private capital investment since the program started.

In reviewing trends over the past few years, the extreme economic downturn since late 2007 resulted in plummeting real estate investment in 2009 and a slow recovery since then. As a direct result of those difficult market conditions, the N.C. Brownfields Program saw a substantial reduction in the numbers of redevelopment applications -- from 50 in Federal Fiscal Year (FFY) 2007 to 27 each in 2008 and 2009. In FFY 2011, the program received 45 applications. This compares favorably with the 36 applications received in FFY 2010 and indicates a continuing improvement in the real estate market.

Local governments continue to have great success in competing for EPA brownfields grant funds. The EPA awarded approximately \$60 million in competitive brownfields grants to local governments in FFY 2011. The brownfields grant program has had statewide reach, as 35 local government entities have been awarded 56 separate grants.



*Before - Abandoned Textile Mill, circa 1888
and Chromium Electroplater, circa 1955*



After - Alpha Mill Apartments bordering uptown Charlotte

Underground Storage Tank Program

Leaking petroleum underground storage tanks can contaminate groundwater, which often is used as a source of drinking water. DWM's Underground Storage Tank (UST) Section ensures compliance with all relevant state and federal laws and regulations by assisting owners and operators of USTs in compliance. This section also oversees the administration of trust funds for the reimbursement of cleanup costs associated with UST releases and manages permanent closure activities of UST systems. Since 1988, more than 17, 730 UST releases have been remediated. The state has approximately 7,770 additional releases that still need to be cleaned up.

Discharges or releases from petroleum USTs are reported to DENR regional offices and added to an incident management database. Table 7 lists, for each region and for the entire state, the number of incidents reported, the number of incidents closed out and the number of UST systems properly closed without leaks or releases (called "clean closures"). These numbers are listed for FY 2011 and for the entire history of the UST program.

Incidents closed out in any year are not necessarily the ones reported in that year – many releases take years to clean up and close. Note that in FY 2011, the program closed more incidents than were reported -- a trend that decreases the backlog of UST contaminated sites that have not been fully addressed. There are probably various reasons for this, including the economic downturn, that has slowed property transfers and construction; many new releases are discovered during real estate transactions and construction projects. The UST program has also been able to increase the number of incidents being addressed based on availability of resources in the Commercial Cleanup Funds.





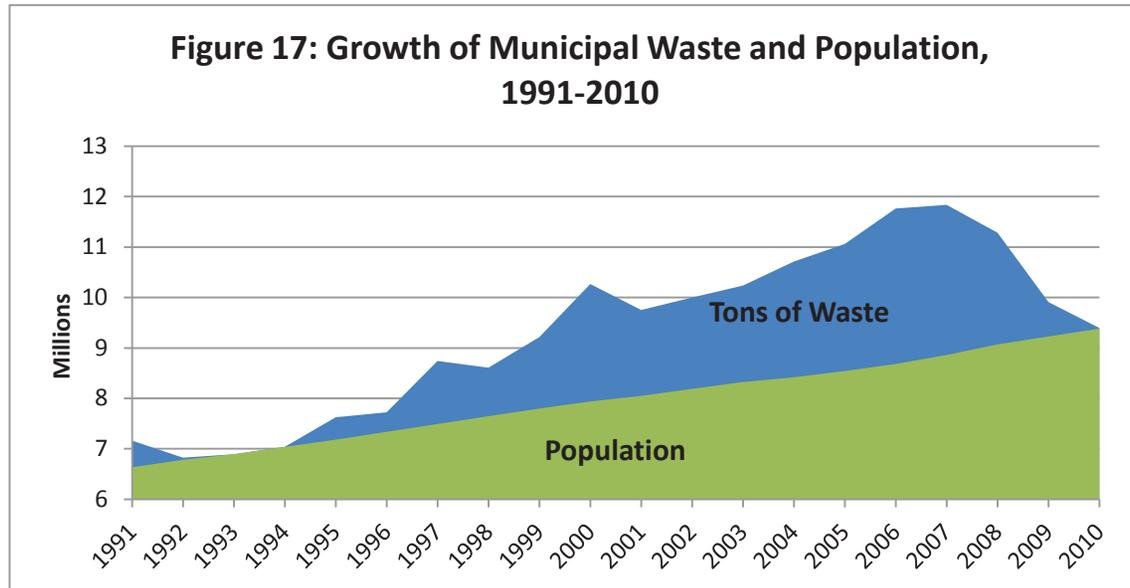
Table 7: Petroleum UST Incidents By Region ¹						
Region	7/1/10 – 6/30/11			7/1/88 – 6/30/11		
	Reported	Closed	Clean Closures	Reported	Closed	Clean Closures
Asheville	100	88	9	2,744	1,777	882
Fayetteville	29	58	26	1,182	1,072	1,481
Mooreville	121	165	18	5,111	3,799	1,298
Raleigh	160	184	10	5,305	3,534	693
Washington	115	136	1	3,390	2,232	114
Wilmington	53	58	3	2,041	1,282	472
Winston-Salem	153	206	15	5,731	4,035	2,015
State Totals	731	895	82	25,504	17,731	6,955

Incidents affecting groundwater that have been closed:	6,075
Incidents closed since risk-based corrective action began on 1/2/98:	13,434
Remaining open incidents:	7,773
Open commercial incidents:	6,257
Open noncommercial incidents:	1,516

At present, 6,257 commercial incidents have yet to be closed out. Although responsible parties continue to have a statutory duty to clean up petroleum releases, Session Law 2004-124 limits the amount of cleanup work that DENR can direct at any one time to the amount that can be reimbursed by the state trust funds within 90 days. This approach has eliminated the negative balances in both the Commercial Fund and the Noncommercial Fund, but has resulted in a backlog of properties waiting to be cleaned up. While the UST program works to clean up and close existing incidents, new (or newly discovered) releases are also being reported. There was a modest decrease in the number of releases reported this year - 731 in FY 2011 as compared to 793 in FY 2010.

Solid Waste Generation

Solid waste or garbage consists of everyday items we consume and discard. It predominantly includes food wastes, yard wastes, containers and product packaging, and other miscellaneous inorganic wastes from residential, commercial, institutional and industrial sources. Inorganic wastes include appliances, clothing, boxes, disposable tableware, furniture, wood pallets and rubber tires. Until recently, the amount of waste generated in the state had grown as the population rose (Figure 17).



The state per capita disposal rate is approximately one ton per person per year, which represents a reduction of eight percent from FY 1991-92. Despite this reduction, North Carolina local governments generated and disposed of 9.4 million tons of municipal and construction and demolition waste. Analysts have attributed recent declines in solid waste disposal to the continued economic recession that began in the fall of 2008; the downturn in the housing market has been a major factor in the decrease because of the reduction in construction waste.

North Carolina has 41 operational municipal solid waste (MSW) landfills and one municipal solid waste incinerator. The total remaining capacity of all North Carolina MSW landfills measures approximately 358 million cubic yards, equating to approximately 221 million tons of MSW waste. If North Carolina's rate of landfill use remains steady at approximately 7.6 million tons annually, the state would have 29 years of landfill capacity remaining.

Overall, statewide capacity is sufficient, but some parts of the state face limited regional capacity. Regions may experience disruptions and additional costs as facilities close, open or change service areas. Much of the state's waste capacity is not widely available due to permit conditions, franchise arrangements, service areas and distance.



Municipal solid waste represents an opportunity for reuse, recycling and material recovery. Recycling has gained momentum in North Carolina; recycling employment increased in the state by 4.8 percent from 2008 through 2010 and recycling companies have made combined investments in plant and equipment in the past three years exceeding \$150 million. This expanded recycling infrastructure is helping North Carolina further reduce the tonnage and environmental impacts of solid waste disposal.

NC DENR has promoted recycling by implementing a series of policy measures since 2008. The ABC bar and restaurant recycling law requires certain holders of Alcohol Beverage Control permits to recycle all recyclable beverage containers. The North Carolina electronics recycling producer responsibility law requires computer equipment and television manufacturers to be responsible for the collection of their equipment (this also includes a ban on the disposal of televisions and computer equipment). Other policies banned disposal of wooden pallets, oil filters and plastic bottles. These combined measures have led to an estimated additional recovery of 200,000 tons of recyclable commodities annually. The number of curbside recycling programs in North Carolina jumped from 214 to 259 and the number of households served by those programs increased to the highest level ever, at 1.62 million. Market prices for recycled materials rebounded from the dramatic drop experienced in 2008 and remained high throughout FY 2009-10. In FY 09-10, about 1.3 million pounds of waste was diverted from landfills through recycling. This is approximately 12 percent of all municipal waste.



Hazardous Waste Management Program

Hazardous waste is waste that poses substantial actual or potential threats to public health or the environment. Hazardous waste includes materials that are known or tested to have traits such as flammability, reactivity, corrosivity or toxicity. Many types of businesses generate hazardous waste. For example, dry cleaners, automobile repair shops, hospitals, exterminators and photo processing centers all generate hazardous waste. Larger industrial sources of hazardous waste include chemical manufacturers and electroplating companies. Because hazardous wastes are so dangerous, they cannot be disposed of like common household waste.

In 2009, North Carolina's 497 generators reported production of 71,763 tons of hazardous waste. This was a decrease of approximately 24,000 tons (20 percent) since 2007, although the number of large quantity generators increased by 64. Large quantity generators generate 1,000 kilograms per month or more of hazardous waste, or more than one kilogram per month of acutely hazardous waste. North Carolina ranks 27th among the states in the amount of hazardous waste generated.



The Hazardous Waste Section in DENR's Division of Waste Management has implemented a program that requires the removal and recycling of mercury-containing convenience light switches from scrap automobiles known as "end of life" vehicles. Initially enacted in 2005, and revised by the General Assembly in 2007, this program requires auto recyclers and scrap metal processors to remove mercury switches before the vehicles are crushed, shredded and recycled into the manufacture of steel. The vehicle recyclers and scrap metal processors receive \$5 for each switch that is removed, collected and sent for recycling. Removal of the switches prior to recycling greatly reduces mercury emissions during the steel-making process.

Since 2007, implementation of the Mercury Switch Removal Program has resulted in the removal and recycling of 281,853 mercury switches in North Carolina. As a result, 620.1 pounds of mercury have been prevented from entering the environment. In 2010, 95,123 mercury switches were removed from vehicles.

Inactive Hazardous Sites

While the Hazardous Waste program manages facilities actively producing, using and handling hazardous waste, the Inactive Hazardous Sites program was created by the N.C. General Assembly to address properties contaminated with hazardous substances as a result of past activities. To date, DENR has identified 3,044 chemical spill or disposal sites and old, unlined dumps or landfills that are not being addressed by other environmental programs. Of this number, 2,592 still require assessment, remediation or both.

Of the 2,592 remaining open cases, 676 are old, non-permitted, unlined landfills that operated before state and federal rules set modern environmental standards for solid waste disposal (pre-regulatory landfills). Half of the proceeds of a statewide solid waste disposal tax are directed by statute to the Inactive Hazardous Sites Cleanup Fund for the purposes of addressing contamination at pre-regulatory landfills.

Limited funds are available to assess and clean up other contaminated sites where the person responsible for the contamination lacks the necessary financial resources. Inactive Hazardous Sites Cleanup Fund revenue can be used to address these "orphan" sites as funds are available. In FY 2010-11, DENR used Inactive Hazardous Sites Cleanup Fund revenue to supply alternate drinking water supplies at three sites, conduct assessment to determine the nature and/or extent of contamination at 11 sites and to conduct an ongoing cleanup at another site.

Currently 372 sites, of which 214 are higher-priority cases, have been identified that require further action but have no financially-viable responsible parties. An estimated average cost of cleanup can range from a few thousand to several million dollars, with an average cost of approximately \$563,500. Given the current annual income to the fund of \$450,000, few sites can be addressed and the backlog of sites continues to grow.