

**An Update
of the
North Carolina
Solid Waste Management Plan
2003 to 2013**

Chapter One: Overview

INTRODUCTION

The past fifteen years have brought tremendous change to how North Carolina manages solid waste. Many changes were positive and helped the state reduce and better manage its solid waste. Some changes brought challenges. Ensuring the safe disposal of waste, reducing illegal dumping and litter, increasing recycling and composting, and providing the public with information about solid waste facilities are just a few of these challenges. North Carolina is well prepared to meet them by building on its current successes, learning from past shortcomings, and acting on the input sought from the public it proudly serves.

The Solid Waste Management Act of 1989 created the state's first 10-year plan. The plan, which was completed in 1991, provided guidance on solid waste issues to the General Assembly, state and local government agencies, commercial, industrial and institutional enterprises, and the public. The Act also requires updates to the original 10-Year Plan.

This document is both an update of the original Plan and a compilation of public input regarding North Carolina's next 10 years of waste management. Because the public plays such a vital role in successful solid waste management, input from North Carolina residents has informed and been incorporated throughout this Plan. The input was derived from a wide range of people – solid waste professionals, waste management organization representatives, elected local government officials, and individual citizens. This input, coupled with analyses of the previous plan's successes and shortcomings, yielded this Plan's goal statements and recommended actions. In keeping with the Plan's 10-year span, all five goals have a deadline of 2013. The five goals are:

1. Ensure long-term environmental protection by improving future landfill technology and addressing public health and environmental concerns associated with closed landfills.
2. Substantially increase the amount of waste recycled and composted.
3. Reduce litter and illegal disposal by 50 percent from 2003-2004 levels.
4. Implement policies and procedures to provide information to the public and ensure public participation throughout the decision-making process regarding waste management facilities.
5. Create and continually maintain 20 years of landfill capacity in the state.

Because the goals are interrelated and mutually supportive, many of the Plan's recommended actions are designed to achieve more than one goal.

One important conclusion from the public participation process should be noted: a goal without the means to achieve that goal is unacceptable. Consensus held that key actions to achieve the desired goals must be developed and implemented in tandem. Mandates were identified as the most essential tool for goal achievement.

Despite the public consensus on mandated goals, some of the actions needed to achieve the goals represent a challenge. Some recommended actions do not have universal support and several are quite controversial. With these issues in mind, the Plan presents an array of action steps. If implemented, these steps will allow North Carolina to achieve its solid waste management goals.

KEY FINDINGS ON THE STATUS OF SOLID WASTE MANAGEMENT

Changing economic, social and political conditions have brought new tasks and considerations. Some major components in the solid waste sector transformed, shifted or matured. A summary of these changes, along with their accompanying impacts, is provided below.

Increased disposal

Landfill disposal of solid waste continues to increase both in absolute amounts and on a per capita basis. Significant economic and population growth, and its accompanying dramatic increase in total waste disposal, show no signs of abatement. Since disposal record-keeping began 13 years ago, the amount of waste disposed of in landfills in North Carolina has increased almost 40 percent. The 1990 total of approximately 7.2 million tons grew to more than 10 million tons by 2002. Contrary to expectation, the increase continues despite an economic recession and the state's remarkable recycling and composting accomplishments. North Carolina's waste stream has also changed in composition. Rapid growth in the disposal of construction and demolition wastes, electronics, household hazardous wastes, and tourism waste are major factors. As overall disposal rates increase, the need to ensure statewide disposal capacity remains a concern.

Recycling

North Carolina can claim exceptional growth and success in recycling, which has increased dramatically since 1989. Statewide disposal bans have proven very effective at diverting particular materials from North Carolina's landfills. Despite this progress, North Carolina has yet to reach its potential. Recycling markets, though expanding and widely available, continue to be affected by price swings, global commodity trading cycles, competition with virgin materials, and economic competition with disposal. These factors affect the willingness and ability to recover additional volume or types of materials. However, demand for materials appears strong, and economic development opportunities are available for North Carolina through the greater recovery of recyclables.

Reliance on Tip Fees

The financing, ownership and economics of solid waste disposal facilities experienced a major paradigm shift in the last decade. Formerly, most solid waste was disposed in landfills owned and operated by local governments. General fund (i.e., property tax) resources financed most of those facilities. Today, many North Carolina landfills are privately owned and generally rely on tipping fees to support facility operation. At private facilities, tipping fees typically cover operating costs, retire debt and generate profit. At local government-owned facilities, tipping fees typically cover operating expenses and funds to retire landfill construction debt and, in many cases, also support additional solid waste programs such as recycling or a litter/illegal dumping enforcement officer. Because of the debt burden and other items tipping fees support, local governments with landfills become concerned about revenue loss when waste disposed of at their facility is less than needed to support revenue needs.

North Carolina currently hosts nine private, regional landfills. A number of out-of-state private facilities also serve the state. Competition between landfills has helped keep tipping fees relatively low. This change in the market has created a conflict: the private sector needs waste to generate income, but the

public sector may or may not have an incentive to reduce waste. Where landfills are owned and operated by local governments, reducing the amount of waste disposed of in landfills reduces the funds needed to support a comprehensive solid waste management program. However, local governments that do not own MSW facilities typically use transfer stations to ship waste elsewhere. These local governments may save money when the amount of waste generated is reduced. Depending on landfill ownership, local governments may be motivated or demotivated to reduce waste for financial reasons. The conflict between long-term waste reduction benefits and immediate fiscal goals for both public and privately owned landfills is a complicated and difficult problem.

The impact of private operations on local government is multi-faceted. The loss of flow control may reduce the waste disposed in a particular facility and its associated revenue. This loss may affect local government's role in solid waste planning and enforcement. Regional landfills have spawned the growth of interim solid waste facilities or transfer stations. A significant portion of the state's waste is being shipped further distances. Because these facilities do not generate the profit of a landfill, many counties do not have a source of income to support comprehensive waste management programs other than from their general fund. Thus, the paradigm shift in landfill funding mechanisms – from general fund support to tipping fees – has generated a wide range of factors that are considered in this Plan.

Diverse County Situations

At one time, local government waste management situations were very similar; now a variety of scenarios exist. The 10 largest counties have approximately 43 percent of the state's population and produce nearly 50 percent of the state's waste. Conversely, the fifty smallest counties have only 12 percent of the population and only produce approximately 12 percent of the waste. The past decade has seen some counties grow and expand while others experienced very little economic development or increase in population. The differences in size and waste generation demand different approaches – thus, the differences noted between counties.

Wide discrepancies also exist in the effectiveness of local waste reduction efforts. Some programs – even those operated by small rural governments – are highly effective, comprehensive programs. Others – some in larger and more affluent areas – endeavor only to satisfy minimum standards. Clearly, effectiveness is not based on county size, population or economics.

Public Perception of Solid Waste Facilities

Public concern about landfills is growing. Efforts to site new facilities meet strong opposition and many recent permit decisions granted by the state's Solid Waste Section have been challenged in court. To date, all Section decisions have been upheld.

The resistance to new landfills is partly connected to concerns about old, closed landfills, which are perceived as public health and environmental threats. All of the state's unlined municipal solid waste (MSW) landfills are closed to MSW, though several still receive construction and demolition (C&D) waste at these facilities. The focus now rests on monitoring and managing their long-term care. However, operating C&D landfills and open, lined, municipal landfills also require monitoring. Unlined landfills must be monitored – particularly for their effects on groundwater supplies. Lined landfills, while offering more groundwater protection, inhibit the natural breakdown of waste materials. C&D landfills historically operate at lower standards than MSW landfills due to their contents. A multipronged approach is needed to address the different concerns and safeguard the communities that neighbor these facilities.

Summary

North Carolina has reached a crossroads in solid waste management. Significant progress has been made to reduce the environmental impacts of disposing waste in landfills and to encourage disposal diversion since passage of the Solid Waste Management Act of 1989. Despite impressive strides, new challenges have arisen and the future will bring more. Uncertainty regarding the amount of available, long-term disposal capacity in North Carolina is only one example. Key actions need to be taken to fulfill the goals of safe and efficient solid waste management. These actions are briefly described in this chapter under each specific goal. They are discussed at greater length in the subsequent chapters.

ACCOMPLISHMENTS & CHALLENGES IN SOLID WASTE MANAGEMENT

Looking back at previous improvements and their common denominators helps explain current solid waste management conditions. Some North Carolina accomplishments include:

- Closing unlined municipal solid waste landfills resulted in all municipal solid waste being exclusively disposed in lined facilities. The “98 Rule,” supported by U.S. EPA’s Subtitle D landfill regulations, required all operational municipal solid waste facilities to be lined by January 1998.
- Increasing waste diversion through recycling. Growth in available curbside and drop-off recycling programs, development in the private recycling sector, and state agency ‘buy recycled’ efforts helped recycling markets mature. Capturing previously unrecovered materials and enhancing the state’s recycling infrastructure led to economic growth and job creation in the recycling sector.
- Implementing statewide solid waste disposal bans on certain products in landfills (lead acid batteries, white goods, tires and yard wastes) dramatically lowered disposal rates. Self-sufficient programs like those created for scrap tires and white goods are widely recognized for successfully regulating difficult-to-manage wastes.
- Local disposal diversion ordinances on materials such as corrugated cardboard were imposed by a number of city and county governments. Recycling rates for these materials significantly increased.
- Requiring local government units to create solid waste management plans allowed cities and counties to develop and monitor long-term structured goals. The plans improve local solid waste management and allow for comprehensive state planning.
- Establishing the Solid Waste Management Trust Fund made possible a number of effective waste reduction initiatives across the state. Adequate resources allowed successes that would not have been achieved otherwise.

Despite these past efforts and successes, challenges remain. Some of these include:

- Reducing waste disposal in landfills on a per capita basis. Waste disposal continues to rise, both on a per capita basis and in absolute tons disposed.
- Continuing recycling development. Many commodities have not met their full recovery potential. Recovery of other commodities is stymied by competition with low tipping fees, ease of disposal and – in some cases – a lack of viable use for the recovered material.
- Developing, implementing and disseminating effective educational programs. Though many successful programs exist, informing the public will remain a constant solid waste

- management goal. Strong public education and awareness are associated with many successful solid waste management improvements, from facility siting to recycling.
- Reducing illegal dumping and litter. These problems continue to frustrate many residents and government officials.
 - Monitoring and capturing landfill gas emissions. Some areas use landfill gas extraction programs to generate energy and make a positive economic impact on a local basis. These programs could be applied statewide.
 - Managing closed MSW landfills and pre-regulatory abandoned dumpsites. The facilities are no longer operating, but concerns remain that they threaten public health and the environment.
 - Reducing landfill waste toxicity. Materials containing toxics, such as electronics and household hazardous waste, make up an increasingly larger portion of the waste stream.
 - Identifying long-term funding strategies. The state and its communities need adequate resources to afford progressive solid waste management programs.

When solid waste management successes are compared to unachieved goals, the differences become obvious. Accomplishments were achieved through unambiguous mandates, as opposed to recommendations or voluntary directives. A clear distinction exists between the efficiency and success of programs with access to funding and those without. Programs funded through state or local grants, or those with self-financing mechanisms, succeed more often than programs without funding or infrastructure.

Keeping the public aware of solid waste management issues is a challenge. As other environmental concerns rose in public awareness, commitment and concern to solid waste issues declined in the past 10 years. The lack of public interest has been accompanied by a lack of state and local government commitment. Without public awareness or government commitment, solid waste management improvements come more slowly.

Changes in solid waste disposal present new educational and waste management challenges. Flexibility is required to adjust to changes in the solid waste management sector. This plan was created to address both new challenges and those that remain from the past decade. It recognizes and applies the ingredients that led to previous success (i.e., mandates, funding, public awareness, etc.), while realizing that dynamic policies and actions are needed to advance future goals. Acknowledgment exists that many actions will be difficult or unpopular to implement. Before calling for these actions, they were closely examined to ensure their necessity for continued improvement.

For this and many other reasons, leadership from both government and private industry – particularly the recycling sector – is vital. Commitment to support and manage public and private programs has a significant impact. Management efforts must have solid administration and guidance or they will not succeed. Such leadership often results in strong public education and awareness, which are associated with solid waste management improvements ranging from facility siting to recycling.

Recognizing the ingredients for success allows continued achievement. By applying elements with a proven track record in the right combinations to both new and continuing goals, this plan builds on past success to bring future improvement to solid waste management in North Carolina.

GOALS & OBJECTIVES

Five goals were created after analyzing old and new solid waste management challenges. The analysis incorporated an overview of the status of solid waste management, a review of the previous plan's met and unmet goals, and – most importantly – it incorporates input from the public it serves. Each goal is simple, straightforward and designed to achieve its desired result by 2013.

Goal One: Ensure long-term environmental protection by improving future landfill technology and address public health and environmental concerns associated with closed landfills.

Goal One responds to two distinct concerns. The first concern is that some old, closed landfills may represent a threat to the environment. The second is that new, lined landfills use technology that may not fully protect long-term environmental security.

Research on “bioreactor” landfills that break waste down into inert material can help both municipal solid waste and C&D landfills achieve this goal. Banning specific materials from disposal helps decrease the quantity and the toxicity of landfill materials. Existing programs that divert specific toxic materials such as household hazardous waste, used motor oil, electronics and other toxics should be expanded.

Closed, unlined MSW landfills represent a different challenge because each site is unique. These landfills require risk-based analysis to determine a customized course of action. Steps could include, but are not limited to, improving landfill caps, recovering methane and conducting various groundwater cleanup procedures. A fact sheet for each closed, unlined MSW landfill should be developed. Information on the facility's location, monitoring, groundwater flow and other data should be created and made available to the public.

Objectives for Goal One:

- Research bioreactor landfill design and closure requirements; adjust regulations accordingly.
- Research existing landfill design and performance; adjust regulations accordingly.
- Reduce the disposal of material with potentially harmful components in landfills.
- Review design and monitoring requirements for C&D landfills.
- Develop and distribute action plans for closed MSW landfills and abandoned dumpsites.
- Establish a strategy to fund the long-term care and cleanup of closed, lined MSW landfills.

Goal Two: Substantially increase the amount of waste recycled and composted.

Too many resources are being disposed of in increasingly scarce and expensive landfill space. Unquestionably, increasing the levels of waste diverted to recycling or composting would be an effective way to combat the problem. Past measures to selectively ban specific materials successfully diverted materials. Bans could also be used to increase material recovery. Clean wood and pallets have strong recycling potential. Because much of the necessary infrastructure already exists, implementation would be cost-effective.

In addition to material bans, a series of programs is required to support Goal Two. Public input from statewide forums showed consistent concern about landfill capacity. The general sentiment was that local capability must be supported and recognized for communities to respond to mandates and maintain current performance levels. For example, “pay-as-you-throw” or variable rate programs should be mandated with size thresholds and performance standards. Communities whose populations fall below established size thresholds or those with extremely effective recycling access, participation rates or buy recycled programs, may qualify for exemptions from certain program requirements.

Funding waste reduction activities is critical to achieve Goal Two. Funds are needed to fill infrastructure gaps that keep recycling and composting levels stagnant, establish material recovery facilities, and establish or expand composting and construction waste recycling operations. Advance disposal fees on tires and white goods are examples of successful funding mechanisms that could be applied to electronics and other goods. Establishing a statewide surcharge on tipping fees would help many recycling programs compete with private landfill disposal; it would also fund and sustain local waste reduction initiatives.

Objectives for Goal Two:

- Enact a series of statewide disposal bans on recyclable materials, such as pallets, clean wood waste, oil filters, cardboard, newspaper, office paper and computer monitors containing cathode ray tubes.
- Require local government recycling programs to achieve per capita recovery targets for specific materials.
- Enact a statewide surcharge on tipping fees.
- Implement variable rate pricing and local mandates to increase recycling participation.
- Continue and expand North Carolina's product stewardship initiatives.
- Implement a consistent funding source to recover electronics.
- Increase public awareness and commitment to recycling.
- Increase "buy recycled" efforts by state and local agencies and the private sector.
- Increase diversion of organic materials by state agencies.
- Incorporate recycling and composting into disaster debris management plans.
- Increase grant and loan funds for source reduction, recycling and composting.

Goal Three: Reduce litter and illegal disposal by 50 percent from 2000-2001 levels.

Goal Three addresses the problem of litter and illegal dumping. Roadside litter traditionally falls outside the scope of solid waste management. However, overwhelming public comments on the topic demands its inclusion.

Litter and illegal dumping was one of the most emotional issues discussed in the statewide public forums. Many citizens expressed frustration with enforcement efforts and the legal system's seeming lack of response to the problem. The objectives proposed are a combination of programs that reduce litter and focus on stronger enforcement of existing laws. One effective method is to require local governments to measure and report on their efforts. Identifying a common means to measure litter and illegal dumping would help attain this goal.

Objectives for Goal Three:

- Document the extent and nature of littering and illegal dumping in North Carolina.
- Increase educational efforts for litter reduction and enforcement.
- Require local solid waste plans to implement a litter control element that provides measurable results.

- Require the Highway Patrol, local law enforcement agencies, and the courts to fully report their litter control enforcement efforts to the public.
- Establish an ongoing funding source to prevent and clean up litter and illegal dumpsites.
- Research bottle bills, “litter taxes” and mechanisms used by other states to prevent litter and illegal dumping.

Goal Four: Implement policies and procedures to provide information to the public and ensure public participation throughout the decision-making process regarding waste management facilities.

This goal seeks to remedy concerns that the public is not adequately involved in decisions regarding solid waste management facilities, especially landfills. The state can provide these opportunities – particularly near proposed facilities – if it gives neighboring residents adequate information and opportunities to provide early comments to the state during the initial permit review. Identifying who constitutes a “neighbor” may require different methods as each facility is unique, but common sense methods can be successfully tailored for each location. Custom public participation plans should provide those identified as “neighbors” and their communities with site-specific information and list participation opportunities.

Objectives for Goal Four:

- Ensure public involvement and education when siting new MSW landfills.
- Ensure public involvement and education when making decisions about proposed C&D, transfer and compost facilities.
- Ensure public involvement and education in decision-making for existing solid waste facilities.
- Ensure public involvement and education when making decisions about closed facilities.

Goal Five: Create and continually maintain 20 years of landfill capacity in the state.

This goal satisfies North Carolina’s need to have landfill disposal capacity for wastes that cannot be reduced, recycled or composted. Environmental protection, economic growth and public health protection demand the presence of landfills that safely and economically handle solid waste. At present, several regions face potential landfill closings with no assurance that future disposal capacity will be developed.

To ensure the protection of its residents and environment, North Carolina needs to determine its own landfill capacity. Capacity data should be distributed to elected officials, local government staff, and communities. The state should continue to review and improve the efficiency and effectiveness of the landfill permitting process, while ensuring that the public understands and participates in issues surrounding solid waste management. Reducing the quantity of waste disposed can prolong landfill lifetimes, so actions leading to waste reduction and increased recycling should be promoted and implemented.

Objectives for Goal Five:

- Increase waste reduction efforts.
- Develop a process to certify or identify the need for facilities.

- Provide information regarding landfill capacity need.
- Provide information to local communities regarding solid waste facilities.
- Review the public participation process.
- Improve the efficiency of permit application review.

CONCLUSION

The five goals and their associated objectives are vital to improve solid waste management in North Carolina. They are also necessary to safeguard the public health and welfare. Reviewing the previous State Plan, analyzing the status of solid waste management, and soliciting and studying stakeholder sentiments identified the goals.

The primary finding of this analysis is that goal achievement depends on whether goals are voluntary or mandatory. Mandates were identified as the most successful tool available to achieve solid waste management goals. Goal success is also affected by the amount of funds committed to their achievement. However, implementing mandates is “easier said than done.” Despite their necessity, some objectives will be met with controversy or opposition. However, if one accepts the objective of maintaining and improving solid waste management, this plan offers critical guidance. Combined action from the General Assembly, DENR, local government, the private sector, and North Carolina residents will be needed to achieve the goals.

For a more thorough discussion on the status of solid waste management in North Carolina and supporting data, see Chapters Two through Four. Detailed explanations of the motivations that led to the five goals and the actions recommended to achieve them are in Chapters Five through Nine. Appendices with supporting information follow the chapters.