

ASSESSING LANDFILL CAPACITY IN NORTH CAROLINA

A Summary of Findings

NC SWANA 2010 Spring Technical Conference

Joe Reading, HDR

Gayle Wilson, Orange County

April 29, 2010

Presentation Overview

- ▣ Goals & Objectives
- ▣ Key Parameters of Study
- ▣ Evaluation Process
- ▣ Remaining Life Findings
- ▣ Report Limitations
- ▣ Group Discussion on Future of Landfills



Acknowledgements

- ▣ Report Title: Assessing Landfill Capacity in North Carolina - How Much Remains?
- ▣ Authors: Yukiko Puram and Dr. Morton A. Barlaz, Department of Civil, Construction, and Environmental Engineering North Carolina State University

Key Objectives

- ▣ Study Objective
 - To project the capacities and potential life expectancy of the forty municipal solid waste (MSW) landfills in North Carolina.

- ▣ New Emphasis Placed On
 - Waste Generation Rates: Dynamic vs. static
 - Landfill Capacity: Including expansion potential
 - Where Waste Will Go As Landfills Fill Up: Progression of landfilling across the state



Municipal Solid Waste Landfill Capacity FY08-09

Catawba County Landfill

18-03

3993 Rocky Ford Road

Newton, NC 28658

phone: (704) 462-1348

<http://www.co.catawba.nc.us/depts/u&e/solwasmg.asp>

County
Catawba

DATES	Opened	Surveyed	Years Open
	12/30/1997	4/27/2009	11.3

DISPOSAL (tons)	Fiscal Year 08-09	Total	Average per Year
	132,900.78	1,851,906.00	163,541.75

AIRSPACE (cubic yards)	Constructed Cells	Unconstructed Cells	Facility Total	
	Permitted	7,539,663.00	18,560,337.00	26,100,000.00
	Used	3,539,663.00	0.00	3,539,663.00
	Remaining	4,000,000.00	18,560,337.00	22,560,337.00

COMPACTION DENSITY (tons/cy)	Total Tons	Airspace Used	Compaction Density
	1,851,906.00	3,539,663.00	0.52

REMAINING CAPACITY	Constructed Cells	Unconstructed Cells	Facility Total	
	Tons of Waste	2,092,748.38	9,710,528.79	11,803,277.16
	Years (Avg TPY)	12.80	59.38	72.17
	Years (FY TPY)	15.75	73.07	88.81



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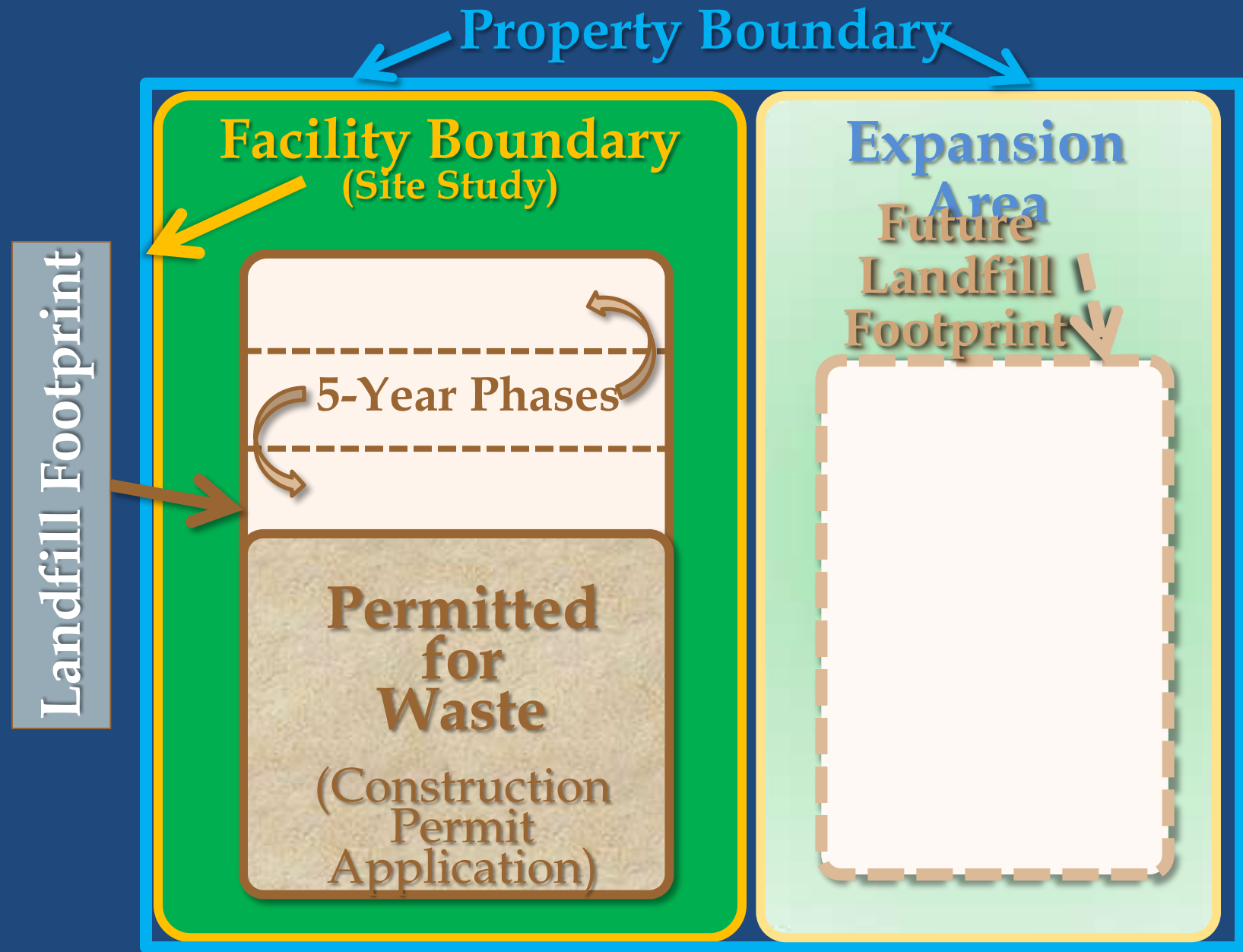
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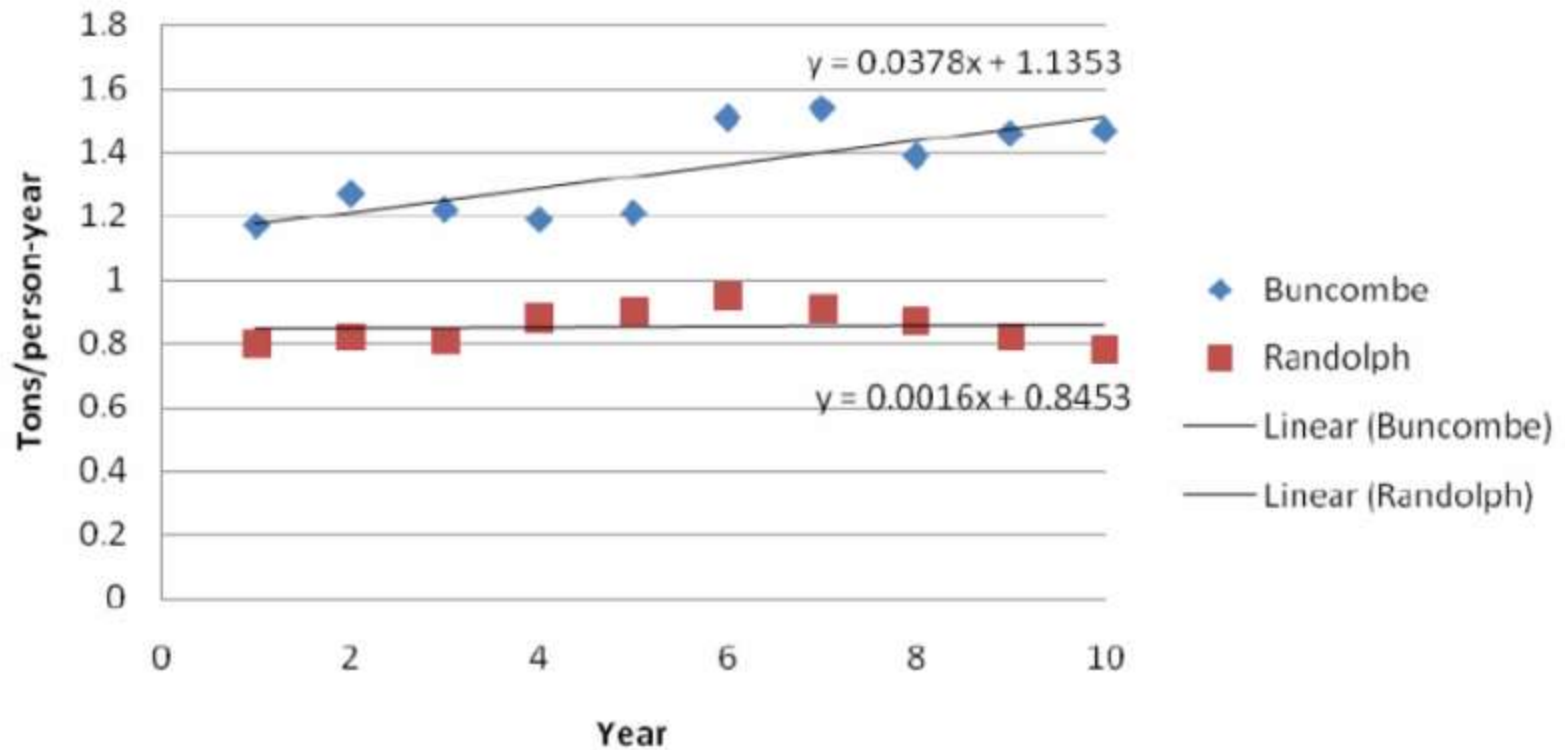
Typical Landfill with Expansion Area

Waste Generation Rate

- ▣ Waste Generation Rate
 - Historical tonnages used to estimate per capita waste generation rates
 - Population projections from OSBM
 - Both used to forecast annual tonnages per county



Waste Generation Rate



Waste Allocation

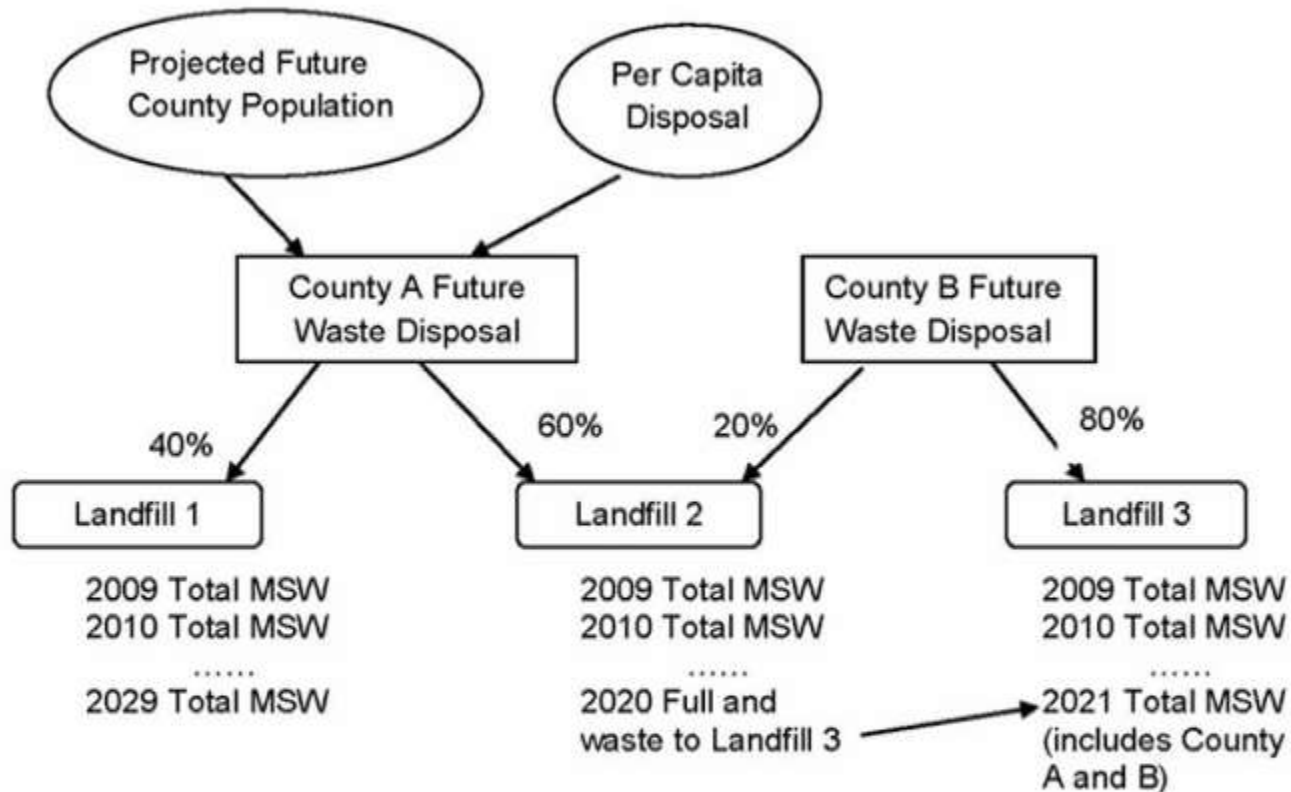


Figure II-1: County Waste Disposal Projection Diagram. In this example, Landfill 2 reaches capacity in 2020 and the waste from County's A and B that is disposed in Landfill 2 goes to Landfill 3 starting in 2021.

Landfill Capacity

- ▣ DENR January 2009 Report to ERC:
 - ▣ 219,000,000 Tons Permitted Capacity

- ▣ This Study:
 - Including Expansions Applied for:
 - ▣ 244,000,000 Tons Capacity
 - Including Additional Properties Planned for Landfill But Not in Current Permit (Site Study):
 - ▣ 453,000,000 Tons Capacity

Landfill Capacity

- ▣ DENR January 2009 Report to ERC:
 - ▣ 219,000,000 Tons Permitted Capacity
 - ▣ **34 Years of life**

- ▣ This Study:
 - Including Expansions Applied for:
 - ▣ 244,000,000 Tons Capacity
 - ▣ **21 Years of Life**
 - Including Additional Properties Planned for Landfill But Not in Current Permit (Site Study):
 - ▣ 453,000,000 Tons Capacity
 - ▣ **34 Years of Life**

Remaining Life Estimates

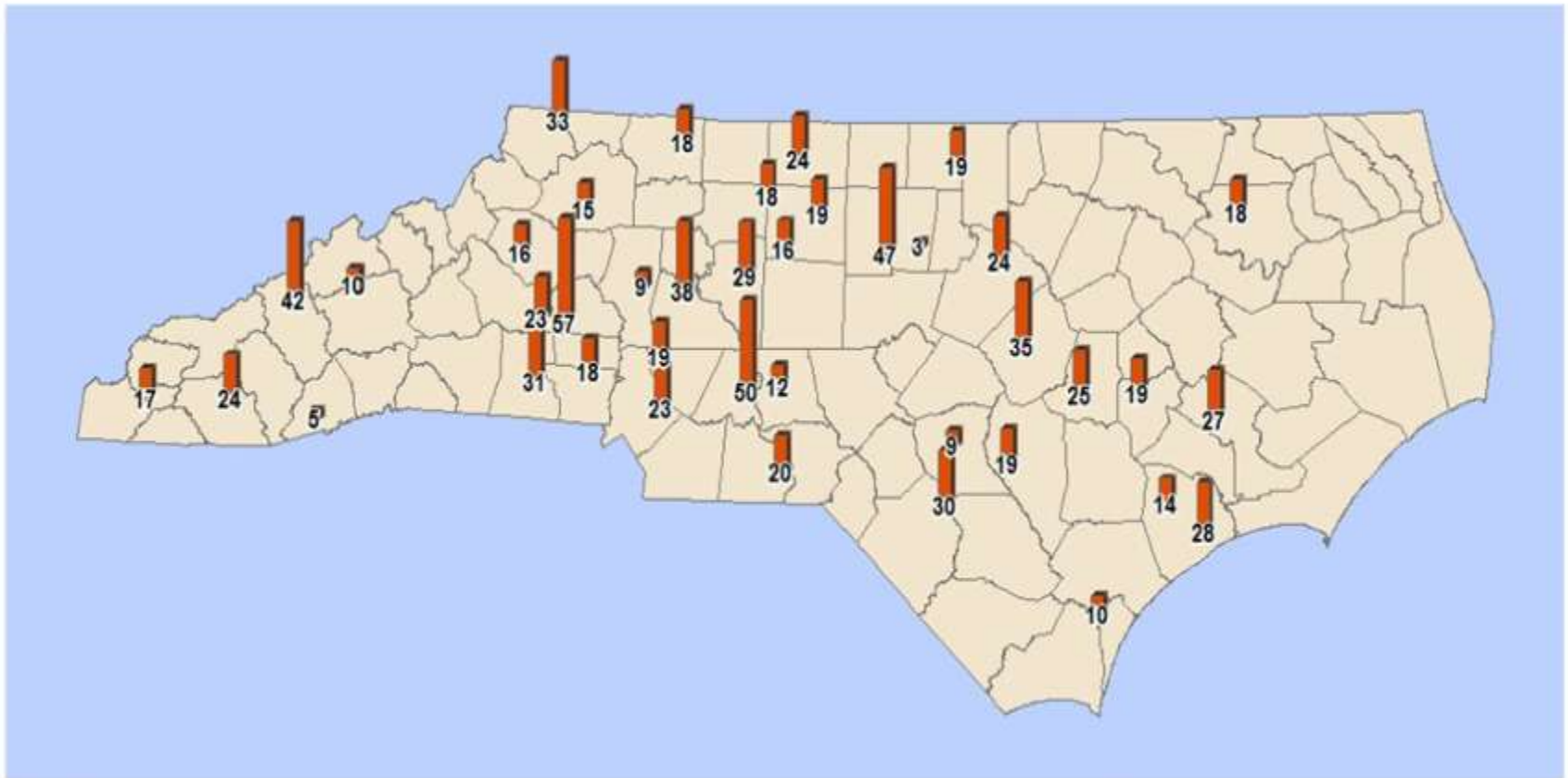


Figure III-1: Landfill Life in Years Based on Current Permitted Airspace plus Pending Expansion Applications

Remaining Life Estimates



Figure III-2: Landfill Life Including Additional Property Owned by Landfill (years)

Changes Over Time

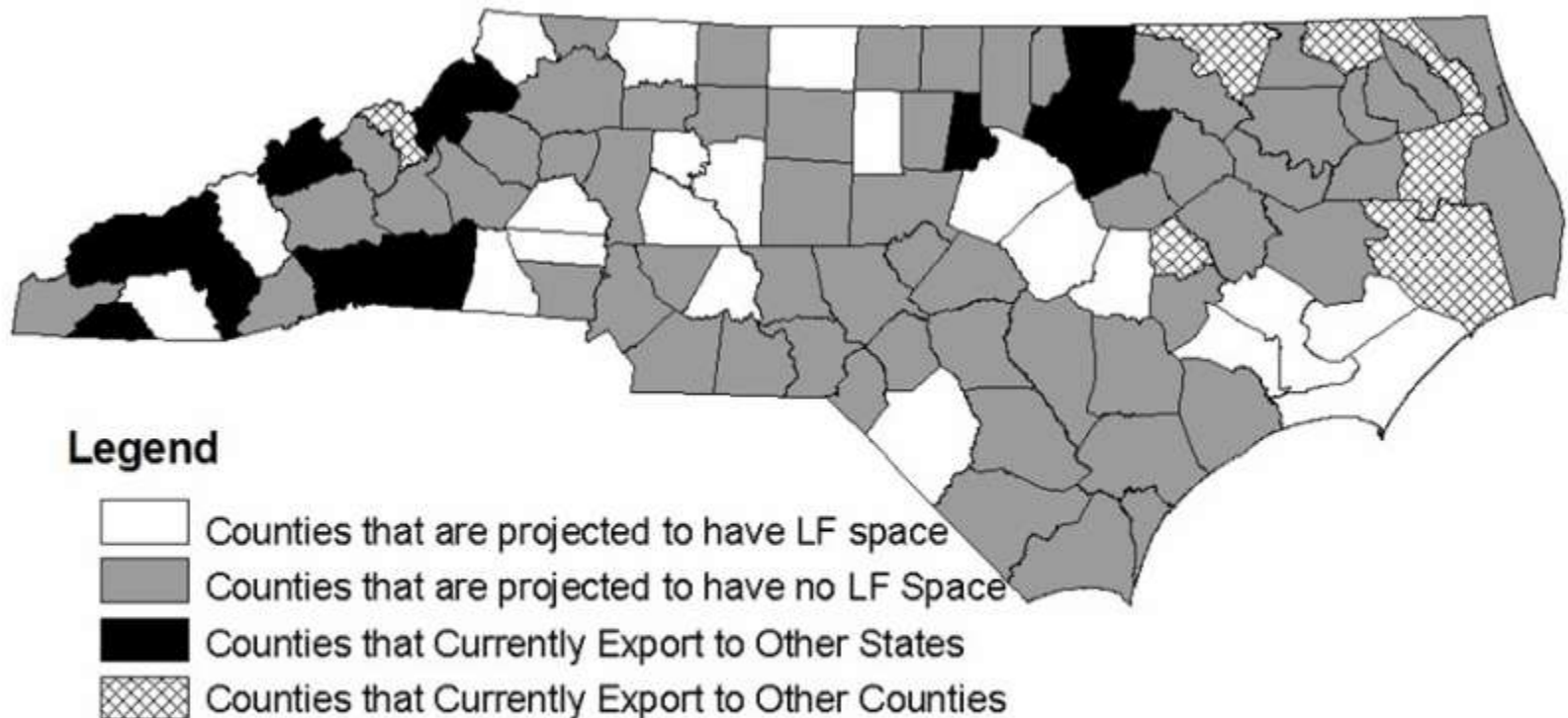


Figure III-3: First Scenario: Projected Landfill Availability in 2028. Based on current permitted capacities plus assumed approval of pending expansion applications.

Report Limitations

- ▣ Tonnage limits are ignored (for now...)
- ▣ New C&D rules/law and effect on MSW
- ▣ Economic downturn not captured
- ▣ Future (new) landfills or other technologies not considered



Discussion



Discussion

- ▣ New Landfill Siting
- ▣ Local Government Landfills are Reducing in Number
- ▣ Horizontal/Vertical Expansions
- ▣ Closing of C&D Landfills – Biosolids Moving to MSW Landfills
- ▣ Landfill Tonnage Limits
- ▣ Service Area Expansions

Discussion

- ▣ Recycling, Waste Reduction, Landfill Bans
- ▣ New Regulations, Restrictions to Landfills
- ▣ Out of State Facilities – Limitations to Exports by New Regulations/Laws/Taxes
- ▣ Environmental Cost of Long Hauling
- ▣ Future of Alternative Technologies to Landfills (WTE, Gasification, Etc.)

Thank You

