

**ATTACHMENT A**

**A RESOLUTION ACCEPTING THE REPORT ON THE THREE-YEAR SOLID WASTE  
MANAGEMENT PLAN UPDATE TO BE SUBMITTED TO  
THE STATE OF NORTH CAROLINA  
Resolution No. 149/2007-08**

WHEREAS North Carolina statutorily requires each County and Municipality to update its ten year solid waste plan every three years, and

WHEREAS Orange County and its municipalities have historically cooperated closely on solid waste management with the County designated as the lead agency for plan development and reporting, and

WHEREAS the Board of Orange County Commissioners has created a representative solid waste management plan work group that is developing a more comprehensive, integrated long term plan including a financial plan and detailed implementation plan that will supercede this plan next year.

WHEREAS the Orange County Solid Waste Department and the Solid Waste Advisory Board have developed a report on the interim plan for consideration by the Town, and

WHEREAS plan development has included representatives from the Town and the Town's interests have thereby been represented in plan development, and

WHEREAS, the Town has discussed and considered this report and the interim plan contained therein and offered its recommendations and revisions to be incorporated into the document to be considered for adoption by the Board of County Commissioners and submitted to the State, and

WHEREAS, this interim plan contained within this report is predominantly a descriptive document with recognition that further substantive work is required on the County's overall integrated solid waste management plan, and

WHEREAS the current submittal is almost two years overdue from the original plan update due date of June 30, 2006

THEREFORE, NOW BE IT RESOLVED that the Town of Carrboro accepts this report on the solid waste management plan update and will consider adopting an interim plan after its adoption by the Board of Orange County Commissioners.



Orange County Landfill 932-2989

Orange Community Recycling 968-2788



# Three-Year Update of Solid Waste Plan (for 2006)

## Orange County, NC

### April 24, 2008

## Table of Contents

Executive Summary .....	3
Chapter 1 Statistics and Information on Solid Waste Management .....	13
Chapter 2 Summary of Solid Waste Management Activities.....	19
Chapter 3 Solid Waste Planning Update.....	21
Chapter 4 Process for Development of the Plan .....	26
Appendix A Copy of Resolution Promoting development of interim plan.....	35
Appendix B Copy of Resolutions Adopting Plan ( <i>pending plan adoption by SWAB</i> ).....	40
Appendix C Map of Waste Sites used by Orange County .....	41
Appendix D Waste Characterization Study Excerpts (1995. v. 2000 v. 2005) .....	42
Appendix E Waste Reduction Goal Sheet .....	45
Appendix F Plan Elements.....	46
Appendix G Supporting Documentation – brochures, newsletters, other .....	59
Appendix H Departmental Goal .....	60
Appendix I Financial plan ( <i>not complete and will not be submitted with interim report</i> )...61	

## Executive Summary

The Orange County Solid Waste Management Department three-year update encompasses the period from the previous update, July 2004 through January 2008. The functions of our Department have expanded and changed since the last update. This report details those function changes, provides statistical information about solid waste management in Orange County from 2006-07 and a description of the planning process we're undertaking now for the integrated comprehensive solid waste plan that will help the County on its way to achieving the goal of 61% waste reduction. As of 2006-07, the County achieved its highest waste reduction rate of 47.7% according to State records.

### Highlights:

#### **2003-04:**

- Added permanent electronics recycling program including warehouse to process materials
- Expanded hazardous household waste to four days a week from monthly collection events, hired permanent on-site contractor to staff Orange County facility.
- Developed 3-R Fee to finance recycling programs and shift costs away from dependence on landfill tipping fee;
- Build pad for storage of wood chips and management of scrap metal and cardboard diverted due to new ban on landfilling clean wood waste, scrap metal and corrugated cardboard,
- Enforcement of regulated recyclable materials ordinance initiated.

#### **2004-05:**

- Expanded electronics collection to Solid Waste Convenience Centers and provide service to central processing location,
- Installed glass pulverizer to crush low value green glass for sale as groundcover,
- Began in-house operations of Rural Curbside recycling in June 2005. Services previously provided by contractor,
- Built new drop-off site for Hillsborough to replace old site,
- Instituted 3-R Fee for all improved properties in Orange County, first billing summer 2004,
- Formed Solid Waste Plan Work Group to lead Integrated Solid Waste Plan development process
- Carrboro automated residential waste collection

#### **2005-06**

- Increased HHW program hours to include Mondays and Tuesdays, now six days a week, up from four (Wed –Sat.) usage increased 8% and tonnage 6.5%
- Add 1,050 new homes to urban curbside program,
- Add 600 homes to rural curbside,
- Open new C&D landfill at existing site, close old C&D landfill

**2006-07:**

- Added mixed paper recycling at curbside and, convert multifamily and some commercial sites from news/magazines to mixed paper.
- Closed Highway 57 Solid Waste Convenience Center (lease expired after 14 years),
- Added 500 homes to rural curbside, 575 to urban curbside
- All residential and MFU and some commercial collections now commingled two-stream, two bins/carts no longer source-separated
- Completed design of Solid Waste Operations Center
- April 2007 the BOCC created the Historic Roger's Road Community Enhancement Plan Development and Monitoring Task Force. To develop and recommend a plan to the BOCC for the enhancement of the living environment in the Historic Rogers Road Community.
- Acquired site, expanded and improved Walnut Grove Church Road Solid Waste Convenience Center, built own site including emergency storm debris management area.

**2007-08:**

- Solid Waste Department took over operation of Solid Waste Convenience Centers and other Sanitation functions e.g. Orange Co. government and school buildings waste collection, from Orange County Public Works Department
- Initiated County-wide Transfer Station Siting Process
- Added CESQGs to hazardous waste and electronics recycling programs at no direct disposal cost to generator (covered by 3-R Fee revenues)
- Closed Animal Shelter Recycling site, lease with UNC expired After 20 years
- Initiated construction of Solid Waste Operations Center

Statistics

During FY 2006-07, the Orange County landfill accepted for burial 73,847 tons of waste including 57,298 tons of MSW and 16,549 tons of C&D that includes mobile homes and inert debris. Another 14,211 tons are reported as generated in Orange County were landfilled out-of-county. (See attached reports in Chapter 1). Most of the out-of-county waste destinations are the same in 2006-07 as reported in previous years, but notably absent was the City of Durham transfer station. We are aware anecdotally, from a local private residential hauler that he delivers about 1,400 tons a year to Durham originating from his Orange County private routes. He has also stated he is aware that other private residential haulers also pick up in Orange County and deliver to the Durham Transfer station. Thus we believe waste generation in Orange County remains underreported.

**Table ES-1 Waste Generated from Orange County 2006-07**

Origin of Waste	Tons	Comments
MSW landfilled in Orange County	57,298	
C&D landfilled in Orange County	16,549	Includes LCID, mobile homes, water plant alum sludge
MSW landfilled outside Orange County	5,555	Reported to State DENR by other facilities based on hauler reporting
C&D landfilled outside Orange County	8,674	Excludes C&D recycled at MWP
Total tons disposed from Orange County	88,060	
Waste per capita (pop = 123,776)	0.711 tons	Base year 1.36 tons/capita -- <b>2006-07 Waste Reduction Rate: 48%</b>

The revenue base for Orange County's Solid Waste management operation has changed substantially from the last three-year update submitted in 2003. In 2003-04, the County adopted a 3-R Fee (Reduce, Reuse, Recycle) to finance most of the recycling programs. Use of the fee reduced recycling programs' dependence on landfill tipping fee revenues and enabled those tipping fee revenues to be devoted to the primary objective of financing the landfill operation. The 3-R Fee is levied on all improved properties, including non-profit facilities, in Orange County at levels that vary in accordance generally with the types of services available to that property. The fee is included on the annual property tax bill. Government agencies, the school system and the Orange Water and Sewer Utility receive special individualized assessments for services provided at all their properties.

The U, R, and M fees are levied where applicable, in addition to the B fee as shown in table below. For example an urban single-family house gets B (\$37)+ U (\$44) fees annually to cover its basic recycling and weekly curbside collection.

The fees are as follows:

**Table ES-2 Annual 3-R Fees in Orange County 2007**

Fee Type	Fee amount	Comments
Basic Fee (B)	\$37	Levied on all improved properties including non-profits and those within Chapel Hill limits, but in Durham County.
Urban curbside (U)	\$44	Weekly curbside residential recycling
Rural curbside (R)	\$26	Bi-weekly curbside residential recycling
Multi Family (M)	\$19	Fee levied on each unit in complex

The attached budget document in Chapter 1 details the funding, revenue and expenses for the Solid Waste Management Department in 2006-07.

#### Changes in the Solid Waste Management Plan for MSW Reduction

##### *Development of the Integrated Solid Waste Management Plan*

The focus of developing the recycling and waste reduction element of the County's integrated solid waste management plan has shifted from primarily a question of whether or not to build its

own materials recovery facility (MRF) as the basis for planning future solid waste reduction strategies to a broader, but more incremental approach to the County's achievement of its sixty-one percent waste reduction goal.

In 2005, to get the planning process energized for the three year update and to revisit the concepts of how to reach the stated 61% goal, the County and the Towns initiated a solid waste planning process by forming a Solid Waste Plan Work Group that included an elected official from each of the four jurisdictions, key members of their solid waste and sanitation collection staffs and the full membership of the County-wide Solid Waste Advisory Board (SWAB). That work group using the technical advisory services of Jeremy O'Brien and Resource Recycling Systems Inc (RRSI) represented primarily by Jim Frey, both under subcontract to Olver, Inc. the County's solid waste consultant, developed a series of reports on the solid waste and recycling system to assist in decision making.

The reports covered the following topics:

- Review of the County's options and potential for increasing recycling to divert more materials from each sub-sector – residential, multifamily and commercial/non-residential and potential reduction and cost to each sub-sector,
- Market-based assessment of the availability of materials processing services from various private MRFs in the region compare to building a publicly-owned MRF,
- Solicitation of information on the costs of constructing a MRF in Orange County to process a larger tonnage than is now collected, possibly including UNC Chapel Hill's recycling tonnage, (18,000 tons is a minimum to make a local MRF work well financially, we're at about 13,000 dry tons, UNC is at about 3,000)
- Evaluation of the drop off site and convenience center systems and alternatives to the current system,
- Evaluation of the cost-effectiveness and environmental impact of a rural residential solid waste collection franchise compared to the current system of convenience centers, public curbside recycling to 65% of households and private, market-based, laissez-fair waste collection,
- Evaluation of conversion of all collection programs to commingled recycling with transfer to private processors from current facility including minimization of current in-house materials sorting, baling and processing for market.
- Legal and institutional assessment of the ability to franchise waste and recycling collections in North Carolina. Professor Richard Whisnant of UNC School of Government conducted this study.

At the writing of this report, two additional studies have been presented for evaluation. One is the development of various scenarios for commercial recycling and waste collection including:

- highly-regulated waste disposal, banning a variety of materials from disposal presumably to ‘force’ recycling with market-based private collections of waste and recyclables,
- franchised waste collection with recycling collections by the franchisee or public sector (County), and
- publicly provided collection of recycling with a variety of public and private waste collection services available on the open market.

The other submitted study is an evaluation of franchised waste collection throughout Orange County with various combinations of jurisdictions potentially participating. That study concluded that creating a franchise does not appear to have great potential to reduce waste collection costs within the urban areas, but may have other value through reducing air emissions and other environmental impacts from collection through economies-of-scale and efficient routing of services, while reducing market choice at least until the franchise is rebid.

These reports will be followed by technical reports on integrating the plan and financing. That will result in development of an overall draft plan to meet the next three year planning cycle update due in June 2009.

#### Construction and Demolition Waste

After establishment of the Regulated Recyclable Material Ordinance (RRMO) in 2002-03, the County, in 2005, opened a new C&D landfill cell of 13 acres purchased next to its current site. Adjoining property owner Duke University provides the buffer zone easement, a unique arrangement in North Carolina. The RRMO prohibits landfilling clean wood, corrugated cardboard and scrap metal and requires they be recycled. It also regulates construction and demolition activities by requiring a solid waste plan in which builders must stipulate how the regulated materials will be managed for recycling. It further regulates haulers to require them to separate these regulated materials or haul to a mixed waste processor as a condition of their local hauling license. It also provides for certification of mixed C&D waste processors to ensure they are separating recyclable materials as an alternative to source-separation.

This C&D cell was originally projected to last 13 years at use rates projected based on diverting the regulated materials, which were about 30% of C&D. The volume of C&D waste fell almost 50% following implementation of the RRMO. This was a result of enforcement of the bans on wood, metal and cardboard combined with relatively high tipping fees for C&D disposal compared to surrounding alternatives and availability of mixed C&D waste processing options as alternatives to source separation of the regulated materials. Thus the C&D cell is now projected to last eighteen years.

While the C&D waste landfilled at Orange County has dropped by an average of 47% from about 30,500 tons a year prior to RRMO implementation to an average of 16,100 tons a year since full implementation, overall C&D *generation* in the County has remained fairly steady. But the destinations have shifted from almost sole use of the Orange County landfill to a combination of burying mixed waste with metal, wood and cardboard removed at the Orange County Landfill, source-separated recycling of wood, metal and cardboard at Orange County, delivery of mixed loads to mixed waste processing facilities and burial at other C&D landfills that accepted C&D



free of the regulated materials e.g. LCID landfills accepting stumps, brick and rock. To illustrate this point, the table below compares C&D destinations in the year before RRMO’s passage with last year, three years after full implementation and staffing of RRMO.

**Table ES-3 Tonnages & Destinations of C&D from Orange Co 2001-02 v. 2006-07**

Year	Landfilled in-County	Landfilled out-of-County	Clean wood & scrap metal	Mixed waste processing	Total
2001-02	27,792	8,134	--	--	35,863
2006-07	16,546	349	2,305	12,436 (inbound to facilities) before processing	31,636

An average of one-third of the tonnage sent to the two County-certified mixed waste processing facilities was recovered, while an average of two-thirds was landfilled. This 33% collective recovery rate (including rating the processed small particles or ‘fines’ as alternate daily cover at 50% of their weight for the diversion calculation) makes the diversion rate from waste at these facilities numerically comparable to the tonnage of readily recoverable clean wood, cardboard and metal that were estimated to have been formerly contained in mixed loads of C&D delivered to Orange County landfill.

The County has added a staff member to conduct field enforcement and education about the RRMO and one-and-a-half staff members to physically handle the regulated materials delivered to the landfill along with a significant investment in infrastructure including a large, heavy-duty concrete pad for delivery, storage and loading the metal as well as processing and loading white goods and cardboard, heavy-duty trailers for scrap metal, open top trailers and a conveyor for loading and hauling wood chips and a cardboard compactor. Use of other equipment including the horizontal grinder used for grinding yard waste into mulch and clean wood, a track loader and a track hoe with thumb bucket attachment used to both load regulated materials and feed the grinder is partly attributable to the County’s C&D management program.

Overall the C&D landfill and recycling program functions smoothly with a 50% reduction in tonnage resulting since the RRMO was passed in 2002. While the reduction in C&D resulted in tipping fee revenue loss averaging \$590,000 at the current C&D tipping fee of \$41 per ton, (14,400 tons x \$41/ton), \$334,000 in new RRMO-related revenue was generated from sale of scrap metal and clean wood along with the various solid waste plan review fees, licensing fees and penalties for RRMO violations (double tip fee penalties). Thus net loss to the Solid Waste Department in exchange for gaining a projected seven years of locally available C&D landfill space averages \$256,000 annually.

Orange County expects a further drastic drop in waste tonnage directed to this facility due to the State’s March 2008 decision in which the State regulators begun strict enforcement of the section of the statute that anything that is not ‘pure’ C&D, coming from a construction site, must be placed in a lined MSW landfill. Orange County estimates that over 50% of the weight received at its C&D landfill must now be diverted to MSW as a result of adhering to this ruling. Orange County believe that the definition of C&D waste should be re-evaluated by DENR.

MSW Management

Orange County's rate of MSW generation has not increased in nine years. For the past four years, since the last three year update submittal, tonnage averaged ~57,100 tons and last FY it was ~57,300 (table 1-4). Reported out-of-county disposal did not rise during the past four years either.

**Table ES-4 MSW landfilled in Orange Co. and outside Orange Co. 2003-04 to 2006-07**

Year	MSW in County	MSW out of County	Total MSW landfilled
2003-04	57,143	4,551	61,694
2004-05	56,308	6,498	62,806
2005-06	57,568	4,153	61,721
2006-07	57,301	5,555	62,856

We gained two years of landfill airspace, due to a combination of this lower-than-expected waste generation rate coupled to increased use of alternative daily cover, shift to heavier landfill compaction equipment and higher-than-expected rates of landfill subsidence, which allowed reclamation of some air space from formerly completed landfill side slopes. Now the MSW lined landfill is projected to close in early 2011, as opposed to the 2009 closure date projected in the previous solid waste plan update submittal. That may be again revised to an earlier closing date by State-mandated recent stricter enforcement of the rules governing C&D landfills that now requires the County to deposit furniture and other bulky items that formerly went to C&D into the lined MSW landfill as of April 2008. That rules change may result in a shift of as much as 8,000 tons a year of waste that is far less dense and not as readily compactable as conventional MSW. This means a loss of at least five months of landfill capacity.

The County is now engaged in a site search process for an MSW transfer station as a resolution passed by the Board of Orange County Commissioners (BOCC) in 2001 stated that no new MSW landfill would be constructed in Orange County. The County now seeks to locate a minimum 25-acre site for the transfer station, which could accommodate waste management activities as well as provide ample buffer. The BOCC is leading this transfer station site search directly with assistance of an engineering consultant and it is scheduled to be completed by the end of calendar 2008. Design, permitting and construction are to follow that. An opening date is reasonably projected at mid-2011.

The timing of the projected landfill closure in early 2011 compared to projected transfer station completion in mid-2011 creates at least a several month projected gap. Managing MSW during that time period will be challenging, expensive and environmentally difficult and will become more so as the new rules governing what was formerly considered C&D further reduce the lined landfill space.

Planning Approach and Progress Towards Goals

While Orange County is the lead agency in overall solid waste management in Orange County, it continues to actively engage with its partners, the three Towns and UNC as well as citizens and

businesses overall. The partnership is partly institutionalized through the interlocal agreement which stipulates all waste controlled by the four local governments is to be delivered to the Orange County landfill. While UNC is not a signatory to the interlocal agreement, it continues to direct its waste collection contractor to deliver its waste to the Orange County landfill. In exchange, the University receives collection, at no fee, of organic waste including food, lab animal bedding and other separated putrescible wastes under auspices of Orange County's contract for diverting commercial food waste to a commercial compost facility.

The active intergovernmental partnership is also manifested through the work of the Solid Waste Advisory Board (SWAB) whose eight voting members are selected, two each, by the elected boards of the County and each of the three Towns, with UNC as an ongoing ex-officio partner. The SWAB advises the County on solid waste matters, budget and policy. In 2005, the Solid Waste Plan Work Group was established to further the specific objective of creating a more comprehensive solid waste plan. It continues to review technical materials and deliver its opinion and recommendations on matters related to the reports referenced above. That group includes the SWAB membership, an elected official from each of the four jurisdictions and technical staff from each jurisdiction's Sanitation/Solid Waste Division.

#### Service Provision

The County continues to provide recycling and landfill services county-wide. Provision of recycling collections and services by one agency across multiple jurisdictions is relatively unusual, but continues to be effective here in terms of the economy-of-scale and centralized provision of solid waste and recycling education and information. The whole County has one phone number email and web address for any recycling and landfill information.

Beginning in 2007-08 the Solid Waste Management Department also took managerial control of the Sanitation Division from the Orange County Public Works Department, including five rurally located solid waste convenience centers, the County schools' waste collection and responsibility of off-landfill litter control. Fiscally the centers, school waste collections and litter control activities remain part of the County's general fund budget, while the rest of the Solid Waste Management Department is funded through an enterprise fund, with income sources separate from the County's General Fund.

Solid waste collection services are all privately provided in unincorporated Orange County. The three Towns all provide public waste collection to residential customers in their respective incorporated areas and a mix of public and private providers is used by commercial/non-residential entities in the incorporated areas. UNC provides most waste collection and recycling services by contract. The majority of waste generated in Orange County is delivered to the Orange County Landfill (see Table I). On-site inspectors at the working face scrutinize all incoming waste for the presence of regulated recyclable materials -- cardboard, metal and clean wood as well as for State or Federally banned materials including brush, batteries, tires, appliances, hazardous waste and infectious wastes.

#### Environmental Monitoring

We have 35 monitoring groundwater monitoring wells as shown below. We sample 28 wells semiannually for the criteria pollutants of pH, conductivity, temperature, total metals as well as

volatile organics using EPA method 8260 and an inorganic analysis for lead, barium, cadmium, chromium, lead, mercury, selenium and silver

The wells are distributed as follows:

South Side MSW (active, line) -	14 wells: sample - 12
North side (closed MSW, 1995, unlined) -	16 wells: sample - 12
New C&D north side -	5 wells: sample - 4

To monitor methane we have 18 gas-monitoring probes on the north side and 19 gas monitoring probes on the south side. We take gas readings quarterly. Through this testing we recently discovered a methane migration at the landfill edge and it is being controlled by installation of a localized gas collection system. A gas flare is currently used to reduce odor problems from one 'wet' well. There are also 45 passive gas-venting pipes in the north landfill that are not monitored directly but control gas flow direction. Additional measures to control odor are being evaluated.

#### Waste Reduction Goal Calculations

In 2006-07 Orange County's state-calculated waste burial rate was 0.711 tons per capita, which is equivalent of a waste reduction rate of 47.7% per capita compared to the County's base year waste generation rate of 1.36 tons per capita in 1991-92. This is the County's highest calculated rate yet reached.

Orange County is aware of at least one private in-County hauler that reported to us orally that they pick up about 1,400 tons of waste per year from Orange County residential customers and deliver it to the Durham [City] transfer station, yet no tonnage is noted in the annual state solid waste report as being delivered to the Durham Transfer Station from Orange County. We have notified Durham and the State Solid Waste Section of this via email. If, as a surrogate calculation we were to include an extra 1,400 tons of waste as generated in Orange County to the 88,060 calculated by the State as landfilled from Orange County, it would push the waste reduction rate down to 46.9%, still our highest rate ever recorded since we began the calculation in 1995.

#### Summary of Chapters 2-4

Orange County Solid Waste Management program changes in recycling and landfill operations including waste reduction efforts were noted in the bulleted, annualized list at the start of the summary. They are detailed in Chapter 2, Table 2-a. Table 2-b summarizes work by individual jurisdictions. Additional details of work by jurisdictions is included in Appendix G.

Chapter 3 describes the prior planning efforts in more detail and highlights recycling program performance over the past three years, showing an increased tonnage once the mixed paper was added during 2006-07. Cost per person and per pound for collecting and processing hazardous waste have FALLEN as more tonnage has been collected in what the County terms its Toxic Reduction Improvements Program or TRIP. Additionally market value for metals and used oil has improved markedly. Future program financing issues will include re-examining the 3-R fee for commercial recycling potential, holding landfill tipping fees as low as possible, given the law requiring a \$2 per ton additional payment to the state, beginning in 2009, from every North Carolina Landfill and transfer station.

Future disposal options will continue to include the County-owned C&D landfill and, until early 2011, a County-owned and operated MSW landfill. After that facility is full, the County will utilize a transfer station to ship waste as the main component of MSW management. As part of the transfer station operation, the County will also negotiate a contract with an out-of-County landfill to accept MSW from Orange County. Future solid waste financing options may include borrowing funds to close and cap the current landfill as well as to construct the transfer station. We expect to continue to use predominantly the tipping fees along with some recyclables sale revenue and other small income sources to finance the landfill operation as well as provide some supplemental funding to the recycling effort.

Chapter 4 shows the plan approval process including the public involvement element and getting final approval from the Board of Orange County Commissioners.

## Chapter 1

**Statistics and Information on Solid Waste Management**

Solid Waste Department Budget for 2006-07 Tables 1a-1d

Table 1-a Summary of Revenues and Expenditures

Table 1-b Landfill Operations and Expenditures

Table 1-c Administration Expenditures

Table 1-d Recycling Division Expenditures

The Department is divided into three divisions, Landfill, Administration and Recycling and the budget is organized that way. The fund for recycling represents the Departmental expenditures on recycling and waste reduction programs for all programs, salaries, equipment, fuel, repairs, etc. Ninety percent of its funding now comes from the 3-R Fee. The remainder is from recycling program revenues and landfill tipping fees.

Cost of the solid waste education, programs, and planning are incorporated into the administration budget. The administration division's budget has been funded 50% from landfill operating revenues and 50% from recycling operating revenues as about half the division's effort supports each of its two major operations. A shift in funding sources may occur with addition of the Sanitation Division to the Department's operation.

The Landfill Division is funded mostly by landfill tipping fees with a combination of white goods and tire reimbursements, landfill penalty fees, licensing fees, mulch and metal sales and interest on income making up the remainder.

**Table 1-a Solid Waste Department Budget Summary**

<b>Division</b>	<b>2005-06 Actual</b>	<b>2006-2007 Estimated</b>
Administration	989,301	1,417,865
Landfill Operations	2,608,863	3,345,681
Recycling Operations	3,972,084	3,005,459
Total Expenditures	7,570,248	8,726,646
Capital	1,240,067	1,291,732
Total	8,810,315	10,020,378
Offsetting Revenues	8,810,315	10,020,378

**Table 1-b Landfill Operations and Expenditures**

<b>Item</b>	<b>2005-06 Actual</b>	<b>2006-07 Actual</b>
Personnel	1,175,401	1,139,037
Operations	1,269,799	891,469
Capital	163,663	43,153
Equipment Reserve Allocation	834,819	923,646
Total	3,443,682	2,997,305

**Table 1-c Administration Expenditures**

<b>Item</b>	<b>2005-06 Actual</b>	<b>2006-07 Actual</b>
Personnel	435,822	453,908
Operations	539,169	560,970
Capital Outlay	14,309	1,074
Equipment Reserve Allocation	15,592	7,682
<b>Total</b>	<b>1,004,893</b>	<b>1,939,598</b>

**Table 1-d Recycling Expenditures**

<b>Item</b>	<b>2005-06 Actual</b>	<b>2006-07 Actual</b>
Personnel	722,231	783,035
Operations	3,122,787	2,455,425
Capital Outlay	127,066	230,955
Equipment Reserve Allocation	389,656	360,404
<b>Total</b>	<b>4,361,740</b>	<b>3,829,819</b>

Solid Waste Tonnage Managed at the Orange County Landfill FY 2006-07

The spreadsheets below document the monthly incoming materials and revenues derived from tipping fees, sales, and penalties. This record represents a comprehensive look at all the materials and resulting revenues from the materials managed by Orange County's Solid Waste Management Department except for recyclables collected at the curb and dropoff sites which are presented in an annual summary table.

Table 1-e Solid Waste Landfilled and Managed by Type FY0607

	July	August	September	October	November	December	January	February	March	April	May	June	Total/ YTD
<b>GARBAGE TYPE (tons)</b>													<b>2006-2007</b>
<b>MSW</b>	4,848	4,948	4,726	4,971	5,060	4,596	5,054	4,103	4,721	4,721	4,978	4,574	57,298
Tipping Fees-\$46/ton	224,214	229,586	218,804	231,235	235,321	213,765	234,942	190,736	219,357	219,206	231,516	212,974	2,661,658
Revenue / Ton	46	46	46	47	47	47	46	46	46	46	47	47	46
YTD	4,848	9,796	14,522	19,493	24,553	29,148	34,202	38,305	43,026	47,747	52,724	57,298	57,298
% of total tonnage	1	1	1	1	1	1	1	1	1	1	1	1	
Year ago	4,772	5,457	4,757	4,837	4,861	4,724	4,807	4,125	4,493	4,346	5,345	5,045	57,569
Incr/Decr from last year (monthly)	0.02	(0.09)	(0.01)	0.03	0.04	(0.03)	0.05	(0.01)	0.05	0.09	(0.07)	(0.09)	(0.00)
													<b>2006-2007</b>
<b>Construction &amp; Demolition</b>	1,682	1,297	1,141	1,429	1,243	996	1,078	977	2,059	1,217	1,414	1,440	15,973
Tipping Fee-\$41/ton	81,763	66,669	56,312	68,404	59,910	50,212	52,867	47,495	63,723	59,996	70,523	71,174	749,048
Revenue / Ton	49	51	49	48	48	50	49	49	31	49	50	49	47
YTD	1,682	2,979	4,120	5,549	6,792	7,788	8,866	9,842	11,901	13,118	14,532	15,973	
% of total tonnage	0	0	0	0	0	0	0	0	0	0	0	0	
Year ago	1,298	1,482	1,487	1,431	1,152	975	1,171	1,347	1,313	1,134	1,366	1,529	15,686
Incr/Decr from last year (monthly)	0.30	(0.12)	(0.23)	(0.00)	0.08	0.02	(0.08)	(0.27)	0.57	0.07	0.04	(0.06)	0.02
													<b>2006-2007</b>
<b>Tires</b>	139	180	109	140	128	115	126	105	136	100	114	166	1,557
Tipping Fees	0	0	0	0	33	0	0	0	2,001	28	0	0	0
Revenue / Ton	0	0	0	0	0	0	0	0	15	0	0	0	0
YTD	139	319	428	568	695	810	936	1,041	1,178	1,277	1,391	1,557	
% of total tonnage	0	0	0	0	0	0	0	0	0	0	0	0	
Year ago	133	107	108	110	90	110	115	90	121	111	130	113	1,339
Incr/Decr from last year (monthly)	0.04	0.69	0.01	0.27	0.42	0.04	0.10	0.17	0.13	(0.10)	(0.13)	0.46	0.16
													<b>2006-2007</b>
<b>Vegetative Waste</b>	561	847	1,010	626	604	556	560	353	675	912	760	679	8,145
Tipping Fees	11,402	16,065	17,853	11,989	11,253	10,755	10,419	7,414	13,150	17,119	14,461	12,902	154,784
Revenue / Ton	20	19	18	19	19	19	19	21	19	19	19	19	19
YTD	561	1,409	2,418	3,044	3,648	4,205	4,765	5,117	5,793	6,705	7,465	8,145	
% of total tonnage	0	0	0	0	0	0	0	0	0	0	0	0	
Year ago	635	713	590	571	546	557	662	450	701	814	764	652	7,655
Incr/Decr from last year (monthly)	(0.12)	0.19	0.71	0.10	0.11	(0.00)	(0.15)	(0.22)	(0.04)	0.12	(0.01)	0.04	0.06
													<b>2006-2007</b>
<b>Clean Wood</b>	125	171	124	117	108	103	119	94	163	122	133	149	1,530
Tipping Fees	2,185	2,911	2,052	1,944	1,765	1,659	2,043	1,573	2,768	2,154	2,293	2,525	25,872
Revenue / Ton	17	17	17	17	16	16	17	17	17	18	17	17	17
YTD	125	296	420	537	646	749	868	962	1,125	1,247	1,380	1,530	
% of total tonnage	0	0	0	0	0	0	0	0	0	0	0	0	



**ATTACHMENT B-16**

	July	August	September	October	November	December	January	February	March	April	May	June	Total/ YTD
<b>A year ago</b>	149	151	139	117	103	128	129	120	143	140	160	185	1,663
<b>Incr/Decr from last year (monthly)</b>	(0.16)	0.13	(0.10)	(0.00)	0.05	(0.19)	(0.07)	(0.22)	0.14	(0.13)	(0.17)	(0.19)	(0.08)
<b>Landclearing &amp; Stumps</b>	75	14	53	52	23	36	17	53	31	25	42	55	476
<b>Tipping Fees</b>	3,090	569	2,153	2,140	949	1,484	705	2,198	1,305	1,045	1,750	2,268	19,655
<b>Revenue / Ton</b>	41	41	41	41	41	41	41	41	42	42	42	41	41
<b>YTD</b>	75	89	142	194	217	253	270	324	355	379	421	476	
<b>% of total tonnage</b>	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Year ago</b>	20	16	10	69	31	15	2	4	53	7	35	23	284
<b>Incr/Decr from last year (monthly)</b>	2.84	(0.14)	4.36	(0.24)	(0.25)	1.43	6.64	12.20	(0.41)	2.80	0.19	1.40	0.68
<b>Sludge</b>	0	0	0	0	0	0	3	0	0	0	1	0	3
<b>Tipping Fees</b>	0	0	0	0	0	0	114	0	0	0	25	0	139
<b>Revenue / Ton</b>							45				45		45
<b>YTD</b>	0	0	0	0	0	0	3	3	3	3	3	3	3
<b>% of total tonnage</b>	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Year ago</b>	0	0	0	0	0	0	0	1	0	0	0	0	1
<b>Incr/Decr from last year (monthly)</b>	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	2
<b>White Goods (Segregated)</b>	36	41	31	30	27	32	31	18	29	18	23	26	342
<b>YTD</b>	36	77	108	138	165	197	228	246	275	293	316	342	2,424
<b>% of total tonnage</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Year ago</b>	32	36	32	30	33	46	38	34	44	29	36	40	429
<b>Inc/Decr from last year (monthly)</b>	0.13	0.14	(0.04)	0.01	(0.17)	(0.31)	(0.18)	(0.47)	(0.34)	(0.38)	(0.36)	(0.35)	(0.20)
<b>Clean Metal</b>	70	66	64	59	57	50	71	58	67	80	80	68	793
<b>YTD</b>	70	136	200	259	317	367	438	496	564	644	724	793	5,008
<b>% of total tonnage</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Year Ago</b>	73	75	64	60	66	68	73	64	79	80	74	61	836
<b>Inc/Decr from last year (monthly)</b>	(0.04)	(0.12)	(0.01)	(0.01)	(0.13)	(0.26)	(0.03)	(0.08)	(0.14)	0.00	0.09	0.12	(0.05)
<b>Mobile Homes</b>	4	19	26	8	11	11	4	0	4	0	11	0	98
<b>Tipping Fees</b>	150	750	1,050	300	450	450	1	0	150	0	450	0	3,751
<b>Revenue / Ton</b>	40	40	40	40	40	40	0	#DIV/0!	40	#DIV/0!	0	#DIV/0!	38
<b>Number of Mobile Homes</b>	1	5	7	2	3	3	1	0	1	0	3	0	26
<b>YTD</b>	4	23	49	56	68	79	83		86		184	184	814
<b>% of total tonnage</b>	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Year ago</b>	4	11	23	19	11	45	15	15	23	19	0	4	188
<b>Inc/Decr from last year (month)</b>	(0.73)	0.67	0.17	(0.60)	0.00	(0.75)	(0.75)		(0.83)		NA		0.67

Table 1-f and Table 1-g below are summaries of the annual tonnage of all materials by all programs operated by Orange Community Recycling and others within Orange County. 2005-06 compared to 2006-07. The 6.2% program tonnage growth is partly attributable to adding mixed paper to the urban curbside, rural curbside and multifamily recycling programs, increasing those tonnages 8%, 21% and 5% respectively. The TRIP tonnage increased 8% overall with the electronics component increasing 19% in 2006-07.

**Table 1-f Annual Recycling Tonnage Summary FY05-06**

<b>Program</b>	<b>Contractor</b>	<b>Incoming Scale</b>	<b>Outgoing</b>
Urban Curbside	3,810.30		
Rural Curbside		1,184.05	
HHW	119.92		
Lead-Acid	54.90		
Dry-Cell	9.85		
Electronics			290.10
Oil	104.70		
Oil Filters	8.63		
Antifreeze	3.88		
Propane Tanks	3.20		
Food Waste	1,840.50		
Animal Bedding	509.00		
Multifamily, 1573		759.28	
Multifamily, 1574		273.94	
Commercial, 1574		603.85	
Gov Buildings		85.83	
Drop-off (Blue Boxes)		1,039.00	
ONP			3,052.82
OMG			-
OCC			1,491.58
OMP			1,187.73
Glass - sold			
Glass - Crusher			249.15
Aluminum			36.27
Steel			144.07
Plastic			212.86
Commingle			515.04
Annual Total	6,464.88	3,945.95	8,267.95
<b>Total Tons Managed:</b>	14,732.83	Contractor + Outgoing	
<b>Program Totals</b>			
Urban Curbside	3,810.30	contractor	
Rural Curbside	1,184.05	Incoming scale	
Multifamily	1,033.22	Incoming scale	
Commercial	603.85	Incoming scale	
Gov Bldgs	85.83	incoming scale	
Food/Animal Bedding	2,349.50	contractor	
TRIP	595.18	contractor / outgoing	

**Table 1-g Annual Recycling Tonnage Summary FY06-07**

Program	Contractor	Incoming Scale	Outgoing
Urban Curbside	4,123.30		
Rural Curbside		1,432.90	
HHW	116.41		
Lead-Acid	41.09		
Dry-Cell	12.47		
Electronics	346.39		346.39
Oil	95.64		
Oil Filters	10.32		
Antifreeze	15.82		
Propane Tanks	3.94		
Food Waste	1,802.53		
Animal Bedding	482.49		
Multifamily, 1573		792.97	
Multifamily, 1574		287.86	
Commercial, 1574		637.75	
Gov Buildings		84.55	
Drop-off (Blue Boxes)		898.25	
ONP # 8			2,567.45
ONP # 6			494.89
OMG			-
OCC			1,525.71
OMP			1,160.25
Glass - sold			1,372.57
Glass - Crusher			34.51
Aluminum			34.51
Steel			182.71
Plastic			232.70
Commingled Containers			640.43
Annual Total	7,050.39	4,776.35	8,592.12
<b>Total Tons Managed:</b>	15,642.50	Contractor + Outgoing	
<b>Program Totals</b>			
Urban Curbside	4,123.30	contractor	
Rural Curbside	1,432.90	incoming scale	
Multifamily	1,080.83	incoming scale	
Commercial	637.75	incoming scale	
Gov Bldgs	84.55	incoming scale	
Food/Animal Bedding	2,285.02	contractor	
TRIP	642.07	contractor / outgoing	

## Chapter 2

**Summary of Solid Waste Management Activities Undertaken in the Past Four Years**

Table 2-a provides an overview of the changes made in Solid Waste Management by the County's Solid Waste Management Department and by the various Towns' Solid Waste Operations. There was only one major change in solid waste activities reported by an individual municipality during the period from FY 2003-04 through the present. The Town of Carrboro converted to automated residential collection in 2004-05 and saved one FTE; that position was transferred to another Public Works Division. The various changes made at Solid Waste Convenience Centers are incorporated into the Solid Waste Department's table 2-a although the County's Sanitation Division did not become part of the Solid Waste Department until July 2007

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Table 2-a Summary of New Work Led by Orange County Solid Waste Management Department 2003-2007

Year	Landfill Operations	Landfill and transfer station design, permitting, study (includes gas studies)	Sanitation Division -- Orange County (SWCCs and other)	Recycling Operations	Waste Reduction and Recycling Planning
2003-04	Begin Regulated Recyclable Materials Ordinance Enforcement			Add permanent electronics recycling collection at landfill and processing building. Convert HHW from monthly to 4 days/week	Develop 3-R fee
2004-05			Begin separate collection of scrap metal and clean wood waste at SWCCs	Took rural curbside in house. Add electronics pick up from all SWCCs.	Conduct one-week waste sort. Institute 3-R fee to finance recycling. Restart long-term solid waste reduction plan process with Work Group
2005-06	Close old C&D site. Open new one on North Side of landfill	Conduct landfill gas feasibility study. Plan new Solid Waste Operations Center	Begin separate collection of mattresses at SWCCs to place in MSW landfill	Expand HWW to six days a week	Reports on private MRF use v. starting MRF, overview of future waste reduction options
2006-07		Begin investigation of gas use by UNC or others. Decide to site transfer station at current landfill. Create Rogers Road Enhancement Task Force	Investigate mattress recycling. Closed Hwy 57 site. Built new Walnut Grove SWCC w/ emergency storm debris area.	Switch curbside & apartments to 2-stream. Add mixed paper at both.	Reports on SWCC and Dropoff, rural waste franchising, Comparing private markets for MRFs v. building our own and evaluate all private facilities using RFP.
2007-08		Rescind transfer decision. Begin site search. Being gas use negotiations with UNC. Begin const. of new Solid Waste Operations Center	Solid Waste takes over Sanitation Division Operations	Remove fee on CRT recycling for commercial electronics. Closed Animal Shelter recycling site after twenty years. Begin accepting Haz. Waste from exempt small commercial generators at no direct cost.	Decision to commingle and transfer of recyclables, Reports on franchising commercial waste & recycling collection options,

## Chapter 3

**Solid Waste Planning Update**Planning

This chapter follows the outline in the State plan guidance document. Thus it starts with general planning guidelines followed by description of the work by the Solid Waste Management Department and the Solid Waste Plan Work Group on each plan element and includes a timetable for the coming year along with a description of likely activities in years to come. Appendix F contains the detailed descriptions of the various planning elements listed element by element with source reduction, composting, recycling etc

Orange County's has maintained its long-term goal of 61% per capita reduction in solid waste landfilled but has removed any timetable for achieving that goal. The prior date set for achieving the goal was 2006. The County has made progress towards the goal and during FY 2006-07 achieved its highest waste reduction rate ever of 47.7% per capita.

Extrapolating from the data collected in the 2005 one-week waste sort, if about 50% of what is recyclable that now remains in the waste stream were able to be recycled, the County could achieve a waste reduction rate in the mid-50's percentage. Achieving the final ~5% would have to be achieved through waste reduction or extraordinarily high recycling rates or opening of markets for an array of materials that have been considered unrecyclable or, practically speaking, non-recoverable. It is possible to achieve our goal, as it appears that our MSW generation rate remains steady while population increases slowly at 1.5% to 2% per year. The amount landfilled per capita continues to decrease, even when what is landfilled out-of-county that we can account for is included as it is in each year's state report.

Evaluation of Program Performance

Even without the long-term plan fully implemented, county solid waste efforts continue to evolve and change.

Various waste reduction and recycling programs have matured and continued to grow. The County's hazardous waste program, known as the Toxic Reduction Improvements Program or T.R.I.P. includes the conventional Hazardous Household Waste, the automotive fluids, filters and batteries collection from Convenience Centers and the electronics program at Convenience Centers and the Landfill has expanded annually and tonnage now exceeds 640 tons, up from 595 in 2005-06 and that was increased from 487 three years ago, 32% increase in three years. (See Chapter 1, Table 1-f and 1-g for details)

Curbside recycling in both rural and urban programs as well as multifamily, was slowly growing prior to mixed paper, but adding mixed paper in the second half of 206-07 with the attendant public education, new bin distribution, conversion to two-stream at apartments and rural route additions increased tonnage markedly.

**Table 3-a Recycling Tonnage from Multi-Family and Curbside Programs 2004-2008**

Program	Tonnage 2004-05	05-06	06-07	% Inc. V.05-06	07-08 through Jan	Projected percent increase for full 07-08
Urban Curb	3,362	3,810	4,123	8%	2,713 tons thru Jan. <b>(4,650 extrapolated)</b>	13%
Rural Curb	1,140	1,184	1,433	21%	1,085 tons thru Jan. <b>(1,860 extrapolated)</b>	30%
Multifamily	1,026	1,033	1,081	5%	792 tons thru Jan. <b>(1,193 extrapolated)</b>	10%

Curbside, multifamily and TRIP were the main focus of program expansion in recent years resulting in noticeable tonnage increase (Tables 3-a and 3-b). Tonnage from the commercial recycling program and dropoff sites increased while food waste had a modest drop after significant increase the previous year.

**Table 3-b Summary of Toxic Reduction Improvement Program (TRIP)  
FY 2006-07 v. 2005-06**

Program or Material	Contractor	Tons	Tons	% change
Motor Oil	Holston	95.6	104.7	(-9%)
Oil Filters	Holston	10.3	8.6	20%
Anti-Freeze	Holston	15.8	3.9	405%
Lead acid batteries	Chatham Salvage	41.1	54.9	(-25%)
Dry cell batteries	Battery Solutions	12.5	9.9	26%
Electronics Recycling	Synergy	346.4	290.1	19%
Hazardous Waste	Eco-Flo	116.4	119.9	(-3%)
Propane Tanks		3.9	3.2	22%
<b>Totals</b>		<b>642.1</b>	<b>595.2</b>	<b>8%</b>

**Table 3-c Recycling Tonnage from Commercial and Drop Off**

Program	Tonnage 2004-05	2005-06	2006-07	% Increase v. 05-06
Commercial (cans and bottles)	646	604	638	6%
Food & animal bedding	1,917	2,350	2,285	-3%
Drop Off Sites	4,6,34	5,071	5,209	3%
<b>Totals</b>	<b>7,197</b>	<b>8,025</b>	<b>8,132</b>	<b>1%</b>

## Financing

Departmental operations are now financed primarily by revenue from landfill tipping fees and the 3-R Fees with a growing contribution from recycling sales revenue. The major change since the previous plan submittal has been the addition of the 3-R Fee to create a stable, predictable, equitable source of income to support recycling. It had become apparent by 2000 that the landfill tipping fees alone could not continue to support the recycling programs, thus a fee was passed in 2002 and implemented in 2003. Other incomes sources include white goods and tire reimbursements, interest on income, licensing and penalty fees. See Table 3-d.

Landfill fees cover all landfill operations; 3-R recycling fees cover about 90% of all recycling program costs. Other administrative costs, capital costs and contributions to reserve make up budget areas not included within operations and the funding is split between recycling and landfill operations. The 3-R Fee has become established as a major part of the County's Solid Waste budget. It is tied generally to the level of service received by each sector, thus one receiving weekly curbside recycling will pay more than one who receives biweekly curbside, and those who receive no curbside pay less. The exception is that there are two small commercial programs where the low level of 3-R fee (\$37/unit/year) does not reflect true program costs, but the tonnage diversion and longstanding nature of the programs along with the strong business relationships have accounted for the continuation of those programs under the broader financing umbrella. This arrangement is likely to continue until a broader commercial program is established with a more comprehensive fee structure.

**Table 3-d Revenue Sources for 2006-07 Solid Waste Management**

Source	Amount (to nearest 1,000)	Comments
Landfill Tipping Fees	3,671,000	
3-R Fees	3,000,000	Charged to all improved properties to cover most recycling program costs
Recycling & Mulch Sales	712,000	Includes all scrap metal, compost and wood chips as well as 'conventional recyclables –paper, cans, bottles
White Goods & Tires	212,000	State reimbursements
Landfill Penalty Fees	160,000	For illegally landfilling measurable amounts of cardboard, wood and scrap metal.
Other: RRMO licensing, grants, interest income, bin sales, etc.	206,000	



**Disposal Options and Intergovernmental Cooperation.**

The County has determined that it will not build another MSW landfill in Orange County. There are an estimated three years of landfill life remaining at this point. The County has engaged in a process to site and develop a transfer station to consolidate locally generated MSW and send it to a remote landfill once the current County landfill is full. A site of 25 acres is sought that might accommodate compatible and related solid waste management uses. Orange County has sited and operates an unlined C&D landfill at the current location on Eubanks Road. That landfill is now predicted to last another 15 years or more.

The County plans to continue managing recyclables, hazardous wastes, tires and yard waste at its current facility for the foreseeable future. There is an ongoing commitment to continue to reduce the amount of waste disposed by 61% per person in an effort to conserve resources, protect the environment and save the remaining landfill space until a suitable alternative can be developed.

The intergovernmental agreement, finalized in 1999, continues to operate and provide a strong fiscal and governance foundation for the solid waste operation. The four signatories to the agreement, Carrboro, Chapel Hill, Hillsborough and Orange County, as well as UNC, although it is not a signatory, have all pledged the waste under their control to an Orange County run facility. This pledge has stabilized the amount of waste coming to the landfill.

The Town of Hillsborough contractually obligated its franchised non-residential hauler, Waste Industries, to deliver waste from Hillsborough to the County landfill. UNC has similarly obligated its contract hauler, also Waste Industries, to do the same despite offers of lower tipping fees by the contractor to haul to its own transfer station. The Town and UNC receive recycling services as benefits. The Towns of Chapel Hill and Carrboro deliver waste they collect to the landfill, but other private haulers operating in those jurisdictions are currently under no such obligation. Some of the waste they collect is delivered to Orange County, while some goes to other area transfer stations or landfills. Privately collected waste in the unincorporated areas is generally assumed to go elsewhere as there is no current obligation to bring it to Orange County.

The Solid Waste Advisory Board consisting of eight formally appointed citizen members, two each selected by each of the four jurisdictions plus an ex-officio member from UNC, continues to offer policy guidance and comment on staff work. They also provide recommendations and ideas to the Board of Orange County Commissioners on solid waste matters. Each set of two SWAB members also periodically reports back to their respective jurisdictional elected bodies on matters affecting them such as the County's overall solid waste management plan.

The Solid Waste Plan Work Group, an informal group, was formed in 2005 to give direction to the long-term integrated solid waste plan. That group consisting of the SWAB body of the whole, an elected official from each jurisdiction, UNC representatives and solid waste staff from the four jurisdictions, provides recommendations and guidance on the specifics of the plan, as staff and its technical advisors bring them forth. The Work Group has played an integral role in plan development and will continue to provide recommendations on this plan.

As the Regulated Recyclable Materials Ordinance (RRMO) and Solid Waste planning requirements have strengthened and matured over the past five years, each of the jurisdictions has formalized its means of informing the County of permitted construction or demolition projects within its boundaries and collecting solid waste plan fees for the County's effort. Through ordinance and formal agreements, the various jurisdictions now provide notification and

allow plan review of new construction and demolition to ensure adherence to the County's mandate to recycle wood, metal and cardboard as well to ensure the new or substantially renovated projects provide adequate, accessible outdoor storage space for recyclables to be collected.

The County Solid Waste Department regularly receives lists of permitted building projects so they can ensure a solid waste plan is filed, inspect job sites and provide education and enforcement of the aspects of the RRMO. Solid waste staff from Carrboro and Chapel Hill continues to inspect dumpsters and rolloff containers under their respective jurisdictions' control for the presence of regulated materials and routinely tag such containers to prevent their collection until such materials are removed. Tagging reduces the landfill tip fee penalties the Towns may incur and, for C&D waste, ensures accountability for where waste is delivered.

Solid Waste Convenience Center staff educate, urge and direct the public to separate regulated materials at the Convenience Center sites, as the trucks delivering waste from the sites to the landfill are treated similarly to any other non-residential truck and routinely penalized for presence of regulated materials in their loads. UNC employs its own staff to educate contractors, building operators, students and faculty and police those containers under its jurisdiction to keep them free of regulated materials or they too incur penalties. Thus RRMO enforcement is equitable among jurisdictions and the private sector.

In general, the various Towns also support the County-wide recycling program by distributing recycling bins from their offices, notifying the County of new residences slated to receive collection, providing recycling information to new residents as they move in and giving recycling schedules to all residents along with the jurisdiction's own solid waste information. Each Town's web site also has a link to the recycling program web page.

In 2004-05 some of the various governments in the Triangle J Council of Governments including Chatham, Durham, Orange and Wake Counties, undertook a year long investigation of to determine if any county within a 100 mile radius of a nominal central point in the region, and irrespective of state boundaries, was willing to host a regional landfill to accept waste from the various counties in the Triangle region in exchange for an investment in constructing such a facility. The investigation, led on Triangle J's members' behalf, by an engineering consulting firm, determined there were no willing hosts nor any land that any County or other agency in the region was willing to make available for a regional landfill. Two offers, one from a public agency and one from a private landholder were investigated with no positive result.

## Chapter 4

**Process for Development of the Plan**

Plan development in Orange County is an ongoing process. The process is complicated by the fact that all four jurisdictions and UNC are interested in fashioning a fully integrated plan that cooperatively incorporates all elements of solid waste management from waste reduction through landfilling, encompassing all the sectors of the economy in each jurisdiction. In November 2007, Orange County decided to provide this short-term plan document, which will still be overdue by two years when approved and submitted. This plan submittal is more descriptive than prescriptive and serves primarily as an update rather than a fully adopted plan pending completion of the multi-jurisdictional, integrated, comprehensive planning process.

This plan document has gone to public meeting May 1, and then was reviewed by all three Town boards during May. Following incorporation of their comments, it was presented to the Board of Orange County Commissioners for a final review prior to the end of the current fiscal year. This iteration of the plan, while containing some substantive material, is primarily descriptive as major decisions detailed in the memo at the end of this chapter are still in the process of being made. Following adoption of this admittedly interim plan, the larger process will continue scheduled to conclude in 2008-09

The County remains the lead agency in the planning process. In 2005, the Board of County Commissioners convened the Solid Waste Plan Work Group (Work Group), which has functioned as the advisory group and sounding board for the plan. The Work Group consists of an elected official from each of the four jurisdictions, solid waste and sanitation staff from the jurisdictions led by Orange County's Solid Waste Management staff and all members of the solid waste advisory board. The Work Group has used the technical advisory services of Olver Inc. and its subcontractor RRSI to provide technical analysis and recommendations on various plan elements over the past three years.

Those plan elements evaluated by Olver and RRSI have focused primarily on the expansion and further development of the recycling elements of the solid waste plan, secondarily on waste management collection techniques. The evaluations and studies have included:

- overview of the various recycling programs and the potential to expand them to divert enough materials to reach the County's waste reduction goal.
- evaluation of the option of the County's development of its own Materials Recovery Facility compared to using the existing private MRFs in the region to market and process materials collected in Orange County.
- detailed analysis of the dropoff and convenience centers and options for their future constituted another element of the plan to determine the future role for this critical segment of the solid waste management system.
- consideration of franchised collection of waste in the unincorporated areas of the county
- development of a detailed plan for transferring recyclables currently collected by the County that might later grow to include recyclables from the urban curbside contractor as well as those from UNC
- evaluation of options for commercial waste and recycling collection including the private sector, public sector and various combinations under franchise and licensing agreements

- evaluation of the efficacy of franchising non-residential waste collection throughout Orange County.

Ultimately, these elements will be decided on and knitted into an integrated plan along with a fiscal analysis to determine how the needed expansions and changes could be financed.

Along with the collection components for solid waste and recycling, there is an important disposal component to long-term solid waste planning. The County has decided to manage its future MSW using a transfer station and contracting for disposal in an out-of-County landfill. It initially decided in March 2007 to site the transfer station at the site of the existing landfill slated to close in 2011. Due to strong local neighborhood opposition, the Board of Orange County Commissioners rescinded its decision and decided to conduct a County-wide transfer station site search using a set of criteria to be determined by the BOCC with citizen input. That process is now underway and expected to be completed by the end of 2008. Following site selection, the County is to design, permit, finance and construct the transfer station and hopes to finish this process before landfill closure. The site search process is being led by an engineering consultant and directed by the BOCC with minimal solid waste management staff involvement.

Landfill gas capture and use is another solid waste planning activity the County is currently undertaking. For three years, Orange County has been interested in capture and use of the methane currently vented from its closed 45 acre landfill as well as that from the lined 26 acre active MSW landfill. The BOCC has decided to negotiate a use agreement with University of North Carolina to enable them to make use of the gas to power their new campus at Carolina North. Using the methane for either direct heat or power as pipeline gas or combusting it to make electricity and, ideally capturing the waste heat from the combustion turbines, would reduce the proposed new campus' carbon footprint and help UNC meet its goal of a carbon neutral Carolina North campus.

At this point, these three major elements of recycling program expansion, transfer station siting and landfill gas capture are all being undertaken simultaneously within their own planning constructs, but the integration of the three will occur in the financial analysis phase of the plan due to be accomplished later this year. It is possible that some physical integration among the three elements may occur. One possible synergy could be in the potential future siting of recycling facilities at a transfer station site. Another is the potential to use some energy from captured landfill gas to power solid waste operations in addition to those energy needs of UNC that the gas might meet.

Next steps for plan development are shown in the attached memo to the Solid Waste Plan Work Group delivered March 26, 2008. The responses to that memo at the March 26 meeting and by the Solid Waste Advisory Board at their April 3 meeting are incorporated into the attached version of the memo and indicated as such, using an alternate typeface and italics.

Memorandum**To:** Solid Waste Plan Work Group**From:** Blair Pollock, Solid Waste Planner**Subject:** Planning Process Update and Decision Making Points**Date:** March 26, 2008. UPDATED from SWAB MEETING 4/3/08.NOTE: All SWAB-initiated revisions to actual March 26 memo shown in **ARIAL BOLD**

This memorandum serves as a cover briefing for the two attached technical papers from RRSI and Olver Incorporated on commercial/non-residential waste collection options and approaches. It also provides guidance on issues facing the Work Group and serves to recap some of the work accomplished to date in developing an integrated solid waste plan.

Cover Briefing

Agenda Item #2 (NOTE: **Item 1 was overview presentation, no attachment here**) *Options for Commercial Waste and Recycling Collection*. Jim Frey of RRSI presents a set of options for collecting recyclables and waste from the non-residential sector. Staff and RRSI developed options with input from focus groups held in October 2007 and presented in an electronic survey to all businesses and other non-residential entities in Orange County (and Chapel Hill part of Durham County) administered during January, February and March. Options include:

- Mandatory recycling with business' choice of licensed recycling and waste haulers, No County role in collection, just enforcement.
- County, with Towns, selects franchise haulers for waste and/or recycling. Use of franchise recycling hauler(s) is optional; other haulers may be selected but franchisee(s) must offer recycling. No County role in collection, just billing, education and enforcement.
- County-provided recycling with choice of licensed waste hauler. County administers recycling fees based on size and intensity of business.
- County-provided recycling and franchise haulers for waste collection with fees based on service levels.

The commercial/non-residential sector is the sector with the fewest publicly provided recycling services, thus the greatest opportunities for additional recycling tonnage to be collected. Currently the County mandates recycling of corrugated cardboard, scrap metal and clean wood but does not collect those. Generator must manage them as separated items for recycling. County provides recycling program services to only part of the bar and restaurant sector for cans, bottles and paper and, for a smaller sub-sector, food waste recycling. The Work Group is considering the means of expanding collection in the commercial sector as a key purpose of the March 26 meeting. For further consideration, as a corollary need, are ways to control waste flow through either franchising or licensing with a public destination to be designated as a way to exert more environmental scrutiny and fiscal control over solid waste.

One-hundred-forty six businesses and other non-residential entities replied to the survey and there was no clearly favored option. Thus RRSI will present the results of the survey and its analysis and opinions of the various options based on the respondents' preferences and RRSI's own experience designing and implementing commercial waste and recycling systems elsewhere.

We request that the Work Group review the options and if prepared, express its preference for one or more of the options if there is a clear preference among the members. The expression of preference and/or the need for more information will provide the staff with appropriate guidance to take the next steps in developing what could be the most complex and challenging single element of the overall solid waste plan.

Agenda Item 3. Franchise Commercial Waste Collection. The study from Jeremy O'Brien of Olver Incorporated, one of the County's technical advisors on solid waste, focuses on comparing the option of developing a franchise(s) for commercial/non-residential solid waste collection in Orange County to the current system for that sector, which varies among the jurisdictions. A franchise **did not appear** economically effective but it does have positive potential environmental effects. **A summary of potential effects identified include:**

- reducing costs to customers (**this turned out less cost effective than predicted**),
- reducing garbage truck traffic,
- limiting competition,
- controlling oversight and waste flow,
- presumably directing waste to a County-operated facility.

Recycling could be part of the franchise or not. The 'fairness' issue of how to parcel out franchises to the current haulers active in the County will be one issue that helps determine the acceptability of franchising as a tool to manage solid waste locally.

Last year, Jeremy presented results of research that demonstrated it is *not* cost-effective to provide franchising in only the unincorporated non-residential sub sector of Orange County. There are not enough potential collection stops to create an economy of scale that makes this more attractive than the current open market approach to waste collection. It could be included in a larger system of franchising, but would not stand alone.

The Town of Hillsborough operates an exclusive franchise with a contractor for non-residential waste within Town limits; waste is directed to the Orange County landfill as part of their obligation under the interlocal agreement. The Town is currently evaluating its franchise arrangement and hauler.

UNC also maintains an exclusive MSW hauling contract for on-campus wastes. The evaluation also found UNC's waste contract is also cost-effective compared to study alternative costs. UNC's waste is currently directed to the Orange County landfill as part of their contract.

The current study evaluates the efficacy of franchising if some or all parts of the non-residential sector throughout the County participate and the franchise is divided between two franchisees. That approach may or may not be attractive to all potential users. Some combination of any or all of the three municipalities and the University may opt into a franchise, while the others may decide that their current system is suitable. A final system cost and environmental evaluation will

depend partly on the number and proximity of potential customers; that will be determined by which jurisdictions opt in or not.

We request that Work Group members express their preference for further development of the franchise concept, state if they are not interested in their government or entity pursuing this further and/or if they need further information to make a decision. Those preferences would give the staff and advisors more guidance on the scope of any future franchise analysis. A secondary set of issues involves the administration, level of centralized control and billing, types of services offered and whether or not recycling is included. Franchisee selection will be handled fairly and competitively to ensure the best pricing for the County and an equitable solution among haulers.

### **Planning Process Issues for Recommendations by the Work Group**

The list of issues described below are those that the Work Group has received information about and on which they have either made a recommendation or will need to further evaluate for development of an overall draft plan. RRSI and Olver have provided technical papers and analyses on all these issues over the past year.


- *Processing Recyclables*: One recent key recommendation the Work Group made in November 2007, was to support development of a shipment point at the Eubanks Road facility to a merchant MRF for all commingled recyclables that the County now collects and is likely to collect in the next year. As program tonnage grows more than 10% over the current tonnage level, it will be necessary to develop expanded recycling transfer capacity at the current site or another site. The decision of whether or not the County should build its own Materials Recovery Facility is hereby deferred as we can use this short-term transfer opportunity to gain experience with the private market and focus on program expansion. Commingling collection allows us the labor to both expand the number of collection sites in existing programs and possibly add programs to increase our recycling tonnage and further decrease landfilling. The Board of Orange County Commissioners has requested the staff to return in April with a detailed implementation plan for this action.
- *Rural Residential Waste Services*: Last year the Work Group received a technical report from Olver Inc. about providing universal rural residential waste collection using a franchise with one or more haulers with exclusive territories. That solution was evaluated compared to the current system that is a mix of convenience centers and open-market private haulers and found to provide an economy-of-scale that made it economically and environmentally attractive, if collection were provided county-wide. Such a system works best when it is either required to be used, i.e. paid for by all eligible users or there are fees charged by volume for garbage disposed at solid waste convenience centers. Charging a fee to cover waste management costs at the centers could then often economically justify households' decisions to subscribe to waste collection from the exclusively franchised hauler(s) rather than self-haul. The Work Group made no recommendation on this, but will need to address this issue as part of completing a plan.
- *Solid Waste Convenience Centers and Dropoff Sites*: As a corollary to making a more efficient rural residential waste collection system, RRS prepared a technical report on convenience centers and dropoff sites issued in May 2007. Various options on how to manage convenience centers included limiting the number of centers, charging a fee for

solid waste and providing more recycling opportunities at the centers. Along with this was a proposal to close one or two of the least used unstaffed recycling dropoff sites to improve collection efficiency. Initiating collection of corrugated cardboard at the curb could further obviate the need for the extensive dropoff site system now in place. Charging waste disposal fees at the convenience centers could make rural residential waste collection at the house more efficient and economically attractive to the residents than the currently perceived 'free' convenience center system that an estimated 70% of households use. Rising gasoline prices and concerns about increased carbon consumption may add to this attractiveness. Adding more services such as hazardous waste and rigid, bulky plastic recycling could have the contrary effect of making the centers more popular, but having fewer centers could make the trips more infrequent. The Work Group has made no recommendation on these matters yet; they are pending as part of the plan development.

The table **on the next page** ~~below~~ summarizes the status of various solid waste management issues described above and issues that remain pending and suggests areas where the Work Group will face recommendation to make the draft plan complete.



Table 1. Solid Waste Issues for Recommendations by Work Group (recent and near-term)

Item	Status and Action by Work Group	Comments
Recyclables Processing, current action completed 	Work Group recommendation from 11/07 received by BOCC to transfer commingled recyclables from existing facility with necessary modifications.	Detailed implementation plan due from staff to BOCC for 08-09 budget consideration
Rural Residential Waste Franchising <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Action Pending</b> </div>	Report received from Olver in May 2007. No action taken, Needs further discussion and recommendation from Work Group	High level of interaction with function of Solid Waste Convenience Centers. Decisions must be made together
<b>Expansion of Rural Recycling to all households</b>	<b>SWAB determined this to be near term priority</b>	<b>Works in concert with rural waste franchising recommendation</b>
Drop off recycling and Convenience Centers <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Action Pending</b> </div>	Report received from RRSI May 2007. No action taken. Needs further discussion and recommendation	High level of interaction with function of Solid Waste Convenience Centers. Decisions on franchise and SWCC operations must be made together.
Commercial/non-residential waste collection <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">                         Current Work                     </div>	Report from RRSI outlining options March 2008. Work Group recommends <b>retaining current collection practices following overall sentiment from survey responses</b> <del>one or more options for plan</del>	<b>At this time, no further direct Work Group or survey takers on non-residential waste collection recommend work, as there appears to be satisfaction with the current system.</b>
Commercial/non-residential recycling collection <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">                         Current Work                     </div>	<b>Next step is development of detailed options with costs and implementation concepts</b>	Large-scale commitment to program expansion, significant financial implications. Major Work Group focus
Commercial Waste Collection Franchising <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">                         Current Work                     </div>	Report from Olver evaluates franchise compared to current system. <b>No real financial savings shown</b> <b>Recommendation from needed by Work Group is to continue current collections</b> <del>for current plan.</del>	May provide less costly service with lower environmental impact. Significant cooperation & coordination among jurisdictions. Could involve any combination of jurisdictions and/or UNC. <b>Study identified no major cost savings. Some of the other benefits could be achieved through licensing agreements.</b>

The issues presented in the table below are integral to a comprehensive long-term solid waste plan. They are issues on which the Work Group will need to make recommendations at some future point. They are presented here to provide a perspective on future solid waste work. We have indicated which ones, in our opinion, are integral to completing the current plan, which could be deferred to a future planning effort, once the current plan is approved and submitted, and which are optional for the Work Group to consider.

Table 2. Future areas for Work Group Consideration

<u>Future Items for discussion in current plan</u>	<b>Status and Action by Work Group</b>	<b>Comments</b>
Financing Recycling and Solid Waste Services	No report yet made to Work Group. Any recycling expansions will require funding	Financing options will be part of any plan elements considered. Future work by staff & consultants needed.
Regulatory Issues	No report yet made to Work Group. Mandatory recycling is most likely measure to be considered but flow control, PAYT, and other measures also critical.	Work Group may decide whether to increase regulatory oversight. Flow control would improve financial stability & bring more environmental oversight of waste disposal and increased recycling/diversion.
<i>Accelerating Rural Curbside Recycling Expansion</i> <b>Moved by SWAB recommendation into items to be considered in the near term.</b>	<i>No report yet made to Work Group. Staff report, if requested. Currently ~65% of unincorporated homes served and financed by 3-R Fee.</i>	<i>Work Group may recommend accelerated expansion, even in current planning cycle. Current expansion of 500-1000 homes/yr. No acceleration means all (&gt;90%) homes reached with five years. Expansion implies new trucks and types of collection.</i>
Recycling Program Materials Expansion and Container Selection (bins v. carts) <b>SWAB considered moving into current decisions but determined decision could be separate and made later</b>	No report yet made to Work Group. Not necessary to determine specifics for current plan submittal.	Two-bin, two-stream system works well for current programs. Future programs may require reconsideration of bin and cart types. \$1.5 million to buy carts for all current customers.
<b>Items for future planning cycles</b>	<b>Status and Action by Work Group</b>	<b>Comments</b>
Organics Management	No report yet made. Highly technical and complex work required.	Organics diversion, collection and processing must be considered as part of any long-term strategy to achieve County goals.
<b>Items which may not need Work Group attention but are integral to Solid Waste Planning</b>	<b>Status and Action by Work Group</b>	<b>Comments</b>
Urban Residential Waste Collection	Each Town determines its own. No action necessary by Work Group	Future Pay as you throw may bring more coordinated action
Transfer Station Siting and Development	No recommendation required by Work Group	This is a BOCC led process, but future uses of site may involve Work Group input.

## Appendices

- Appendix A Copy of Resolution Promoting development of interim plan
- Appendix B Copy of Resolutions Adopting Plan (*pending plan adoption by SWAB*)
- Appendix C Map of Waste Sites used by Orange County
- Appendix D Waste Characterization Study Excerpts (1995. v. 2000 v. 2005)
- Appendix E Waste Reduction Goal Sheet
- Appendix F Plan Elements
- Appendix G Supporting Documentation – brochures, newsletters, other
- Appendix H Departmental Goal
- Appendix I – Financial plan (*not complete and will not be submitted with interim report*)

Appendix AMemorandum

To: Solid Waste Advisory Board

From: Gayle Wilson, Director, Solid Waste Management

Subject: Development of an Interim Solid Waste Management Plan

Date: October 4, 2007

Attachments: 2

Staff is becoming concerned about the length of time it is taking to develop the comprehensive County-wide solid waste management plan. We are overdue by 20 months now with our submittal of the three-year update to the State, which was due June 30, 2006. Staff believes it prudent to consider development and submittal of an interim plan now for approval by our local elected boards. This would allow us to comply with State statutes without compromising the quality of the process we need to create an effective long-term plan for Orange County and its municipalities.

Attached is a resolution that SWAB may wish to consider submitting to the Board of Orange County Commissioners requesting preparation of an interim plan. An outline of the proposed interim plan is also attached.

Developing an interim plan would serve several important purposes:

1. Compliance with state statutes, thus enabling Orange County to be eligible for solid waste grant funds, for which we are not now eligible because we are out of compliance.
2. Compliance with state statutes enabling Orange County to avoid delays or suspensions for environmental permitting reviews and approvals which could occur as a result of our non-compliant status.
3. Compliance with state statutes in order that Orange County not lose eligibility for various solid waste related State reimbursements.
4. Creation of an updated interim plan allows our elected officials and the public to see what has been accomplished since the solid waste plan was last updated three years ago. There is quite a long list of developments and accomplishments that should be pointed out in a public, organized way. Because the plan has to be reviewed by each local government as well as at a public hearing, we can use this opportunity to let people know about these improvements in service and the issues facing us, without having to wait another eight months for the report.

We understand that there may be some risk in developing an interim solid waste plan update, such as it becoming in the focus of premature debate with respect to some components/details of our current ongoing comprehensive study process or other ongoing solid waste endeavor/activity. However, we trust that our interim report will be received and considered just as we propose, as a “stop gap” measure to maintain compliance without impairing our current planning process or

*Appendix A cont'd.*

precluding alternative courses of action in the future. While the staff and consultants are proceeding with the plan element reports and intend to present those next month to Work Group; we are aware that this process is slow, deliberate and sometimes frustrating. An interim report is a chance to show some progress while the bigger picture is taking shape.

We recommend that the Solid Waste Advisory Board submit the attached resolution to the Board of Orange County Commissioners to approve development of an interim solid waste plan as a 'placeholder' that allows us to comply with state statute without compromising or rushing along the plan development process. We further request that the Advisory Board offer recommendations on the plan outline presented as Attachment 2.

*Appendix A cont'd.*

Attachment 1 (this numbering scheme refers to the order internal to the above Oct. 4 memo from Gayle Wilson to SWAB, not the larger solid waste interim plan report)

**THIS RESOLUTION WAS PASSED BY SWAB October 4, 2007** A RESOLUTION REQUESTING AUTHORIZATION TO SUBMIT TO THE STATE AN INTERIM THREE YEAR UPDATE TO THE TEN YEAR STATE SOLID WASTE MANAGEMENT PLAN

WHEREAS, every three years each County must submit an update to its original ten year approved solid waste management plan, and

WHEREAS Orange County has not submitted its current three year update due June 30, 2006 because local officials desire to conduct a comprehensive reexamination of community waste management priorities, and

WHEREAS the County has initiated a deliberate, transparent and thorough planning process involving all four local governments as well as UNC, thus causing a longer planning period, and

WHEREAS development of the scheduled, comprehensive three-year update will not be complete for at least eight more months and

WHEREAS an interim plan would bring Orange County into compliance, enabling State reimbursements and grant eligibility and avoiding delays or suspensions of environmental permitting reviews and approvals, and

WHEREAS an interim plan would provide an opportunity for our elected officials and public to become aware of local waste management accomplishments since the last plan was adopted and to become aware of the local comprehensive planning process underway

THEREFORE NOW BE IT RESOLVED the Solid Waste Advisory Board requests that the Board of Orange County Commissioners authorize staff to prepare an interim report, which, while primarily descriptive in nature, also lays out the elements and sequence of the planning process that will result in the more complete plan update in 2008.

BE IT FURTHER RESOLVED that this interim plan would be presented for public input as required by State Statute.

This is the 4<sup>th</sup> of October 2007.

*Appendix A cont'd.*

Attachment 2

(this numbering scheme for the attachments refers to the order internal to the above Oct 4 memo from Gayle Wilson to SWAB, not the larger solid waste interim plan report)

### Outline of Solid Waste Interim Three-Year Update Report

(this update follows the structure of the 2003 update as the State has provided no additional guidance on this plan update process)

## **Executive Summary**

In this section we will primarily discuss what has been accomplished since the last submittal in August 2004, along with a brief description of why we are submitting an interim plan and further describe the upcoming more comprehensive planning process, elements and projected outcomes with respect to disposal and recycling tonnages. It will include an updated goal calculation for the ten year target of 2016-17.

## **Chapter I**

Solid Waste Data from 2005-06 and 2006-07.

This chapter will show all solid waste tonnage and budgetary information from the fiscal year when the report was to have been submitted and, because we have it, data from the most recent year.

## **Chapter II**

Major New Solid Waste Activities:

This chapter will describe County and Town solid waste management activities by sector over the three years (actually four) since the last update: recycling and waste reduction, MSW management, C&D management, Hazardous Waste Management, Planning activities.

## **Chapter III**

Interim Solid Waste Planning Update  
 Evaluation of Program Performance  
 Financing  
 Disposal Options and Intergovernmental Cooperation  
 Location of Solid Waste Management Facilities

## **Chapter IV**

Summary of Comprehensive Plan Development Procedure and Key Plan Elements  
 This chapter will outline the current state of plan development, the projected decision making sequence and elements to be decided on, element integration into a unified plan and how to finance the overall comprehensive plan.

*Appendix A cont'd.*

**Appendices: include descriptive materials,**

Per the State Plan Outline, the various appendices will be detailed planning element sheets required in the report that address:

- A. Reduction at the source,
- B. Solid waste collection,
- C. Recycling and reuse,
- D. Composting and mulching,
- E. Incineration,
- F. Transfer of waste out of the area,
- G. Disposal capacity,
- H. Education in community and schools,
- I. Special wastes including tires, white goods, yard waste, etc
- J. Illegal disposal/litter,
- K. Purchasing Recycled products,
- L. Disaster response.

*End Appendix A*



**Appendix B**

**RESOLUTION ADOPTING THE THREE-YEAR SOLID WASTE MANAGEMENT PLAN UPDATE TO BE SUBMITTED TO THE STATE OF NORTH CAROLINA**

WHEREAS North Carolina statutorily requires each County and Municipality to update its ten year solid waste plan every three years, and

WHEREAS Orange County and its municipalities have historically cooperated closely on solid waste management with the County designated as the lead agency for plan development and reporting, and

WHEREAS the Board of Orange County Commissioners has created a representative solid waste management plan work group that is developing a more comprehensive, integrated long term plan including a financial plan and detailed implementation plan that will supercede this plan next year.

WHEREAS the Orange County Solid Waste Department and the Solid Waste Advisory Board have developed a draft interim plan for consideration by the Town, and

WHEREAS plan development has included representatives from the Town and the Town's interests have thereby been represented in plan development, and

WHEREAS, the Town has discussed and considered the plan and offered its recommendations and revisions to be incorporated into the plan document to be submitted to the State for review after consideration by the Board of Orange County Commissioners, and

WHEREAS, this plan submittal is predominantly a descriptive document with recognition that further substantive work is required on the County's overall integrated solid waste management plan, and

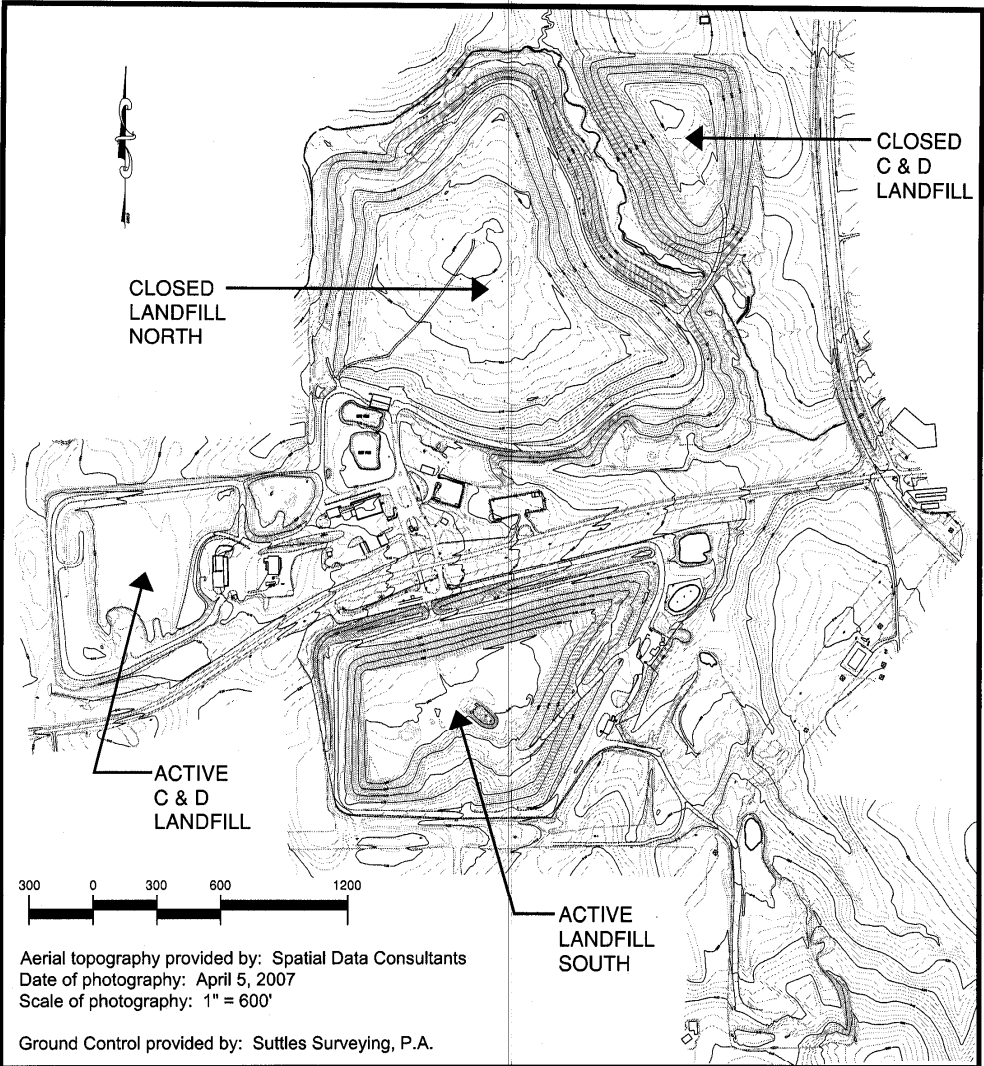
WHEREAS the current submittal is almost two years overdue from the original plan update due date of June 30, 2006

**THEREFORE, NOW BE IT RESOLVED** that the Town of \_\_\_\_\_ adopts and recommends this solid waste management plan update, pending adoption by the Board of Orange County Commissioners.

This is the \_\_\_\_ of\_\_\_\_, 2008.

Appendix C

Map of Landfill



P:\R00592\00592-R00592-56\CAD\SMALL MAPS\dwg SMALL MAPS.dwg April 1, 2008 9:05:21 AM

Aerial topography provided by: Spatial Data Consultants  
 Date of photography: April 5, 2007  
 Scale of photography: 1" = 600'

Ground Control provided by: Suttles Surveying, P.A.

**OVERALL SITE MAP**  
 ORANGE COUNTY LANDFILL  
 ORANGE COUNTY, NORTH CAROLINA

SCALE: 1" = 600'  
 PROJECT: R00592-56

 **Draper Aden Associates**  
*Engineering • Surveying • Environmental Services*  
 700 Harris Street, Suite E Blacksburg, VA  
 Charlottesville, VA 22903 Richmond, VA  
 434-295-0700 Fax: 434-295-2105 Hampton Roads, VA

DESIGNED: N/A  
 DRAWN: HLJ  
 CHECKED: WGH  
 DATE: 04-01-08

**FIGURE**  
 1

## Appendix D Solid Waste Characterization

EXHIBIT 4-1  
ORANGE COUNTY WASTE CHARACTERIZATION STUDY - APRIL 2005  
COMPARISON OF COMMERCIAL WASTE COMPOSITIONS

Material Components	1995 Composition	2000 Composition	2005 Composition
<b>Paper</b>			
Newspaper/Print	6.1%	4.7%	3.4%
Glossy Magazines	2.8%	2.5%	2.4%
Recyclable Corrugated Cardboard	10.7%	3.5%	3.1%
Non-Recyclable Cardboard	N/A	1.8%	1.8%
Phone Books	N/A	<0.1%	<0.1%
Paperboard	N/A	3.5%	2.2%
Other Books	N/A	1.9%	<0.1%
White Ledger	N/A	2.6%	4.2%
Mixed Office Paper	3.3%	3.2%	2.8%
Other Paper (includes hardback books)	25.1%	9.5%	13.0%
<b>Total Paper</b>	<b>48.0%</b>	<b>33.5%</b>	<b>33.0%</b>
<b>Plastics</b>			
All Plastic Bottles	2.2%	3.4%	3.4%
Film	4.8%	7.8%	6.0%
All Cups & Tubs	0.8%	2.9%	1.9%
All Other Plastic (includes styrofoam)	6.2%	4.4%	8.8%
<b>Total Plastics</b>	<b>14.0%</b>	<b>18.5%</b>	<b>20.2%</b>
<b>Organics</b>			
Food Waste	12.2%	20.4%	23.7%
Textiles/Leather	2.7%	5.0%	3.5%
Diapers	1.4%	2.1%	1.1%
Other Organics (includes rubber)	4.5%	4.1%	2.4%
<b>Total Organics</b>	<b>20.8%</b>	<b>31.6%</b>	<b>30.7%</b>
<b>Ferrous Metal</b>			
Food Containers/BI-Metal	1.6%	1.2%	1.7%
Aerosols	N/A	0.5%	0.3%
Other Ferrous	3.2%	1.6%	2.1%
<b>Total Ferrous Metal</b>	<b>4.8%</b>	<b>3.3%</b>	<b>4.1%</b>
<b>Non Ferrous Metal</b>			
Aluminum Cans	0.7%	1.2%	0.7%
Aluminum Foil	N/A	0.8%	1.0%
Other Non-Ferrous	N/A	0.2%	0.5%
<b>Total Non Ferrous Metal</b>	<b>0.7%</b>	<b>2.3%</b>	<b>2.1%</b>
<b>Glass</b>			
All Bottles & Jars	4.0%	3.8%	3.5%
Other Glass	0.4%	0.8%	1.0%
<b>Total Glass</b>	<b>4.4%</b>	<b>4.6%</b>	<b>4.5%</b>
<b>Wood</b>			
Pallets	N/A	0.5%	<0.1%
Lumber	1.6%	1.7%	1.1%
Painted/Treated	1.2%	0.3%	<0.1%
Stumps/Heavy Sections	N/A	<0.1%	<0.1%
<b>Total Wood</b>	<b>2.8%</b>	<b>2.5%</b>	<b>1.1%</b>
<b>Inert</b>			
Brick, concrete, dirt, asphalt, etc.	1.4%	1.5%	1.0%
<b>Yard Waste</b> (includes grass, leaves, small branches)	<b>0.8%</b>	<b>1.3%</b>	<b>0.4%</b>
<b>Special Waste</b>			
Lead-Acid Batteries	N/A	<0.1%	<0.1%
Dry Cell Batteries	N/A	0.2%	<0.1%
Oil Filters	N/A	<0.1%	<0.1%
Other Hazardous Waste	1.5%	<0.1%	<0.1%
Infectious Waste	0.7%	NA	1.8%
Reusable Waste	N/A	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>2.2%</b>	<b>0.3%</b>	<b>2.0%</b>
<b>Brown Goods</b>			
Electronic Goods	N/A	0.6%	1.1%
<b>TOTALS</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**EXHIBIT 4-3**  
**ORANGE COUNTY WASTE CHARACTERIZATION STUDY - APRIL 2005**  
**COMPARISON OF MULTI-FAMILY WASTE COMPOSITIONS**

Material Components	1995 Composition	2000 Composition	2005 Composition
<b>Paper</b>			
Newspaper/Print	7.3%	5.6%	2.9%
Glossy Magazines	5.0%	4.1%	3.8%
Recyclable Corrugated Cardboard	7.2%	2.8%	1.6%
Non-Recyclable Cardboard	N/A	2.0%	0.9%
Phone Books	N/A	0.5%	0.4%
Paperboard	N/A	4.6%	3.7%
Other Books	N/A	0.4%	0.7%
White Ledger	N/A	3.8%	2.7%
Mixed Office Paper	1.3%	5.5%	5.2%
Other Paper (includes hardback books)	23.6%	6.8%	10.4%
<b>Total Paper</b>	<b>44.4%</b>	<b>36.2%</b>	<b>32.3%</b>
<b>Plastics</b>			
All Plastic Bottles	2.6%	4.3%	3.1%
Film	5.5%	4.8%	5.7%
All Cups & Tubs	1.0%	1.9%	1.0%
All Other Plastic (includes styrofoam)	4.5%	4.0%	3.5%
<b>Total Plastics</b>	<b>13.6%</b>	<b>15.1%</b>	<b>13.3%</b>
<b>Organics</b>			
Food Waste	9.7%	21.2%	24.5%
Textiles/Leather	3.3%	4.9%	8.8%
Diapers	2.8%	2.5%	2.2%
Other Organics (includes rubber)	7.8%	2.2%	0.3%
<b>Total Organics</b>	<b>23.6%</b>	<b>30.8%</b>	<b>35.7%</b>
<b>Ferrous Metal</b>			
Food Containers/Bi-Metal	2.6%	2.0%	1.2%
Aerosols	N/A	<0.1%	0.1%
Other Ferrous	1.9%	2.0%	0.3%
<b>Total Ferrous Metal</b>	<b>4.5%</b>	<b>4.1%</b>	<b>1.6%</b>
<b>Non Ferrous Metal</b>			
Aluminum Cans	1.0%	1.3%	0.7%
Aluminum Foil	N/A	0.7%	0.6%
Other Non-Ferrous	N/A	0.4%	0.4%
<b>Total Non Ferrous Metal</b>	<b>1.0%</b>	<b>2.4%</b>	<b>1.8%</b>
<b>Glass</b>			
All Bottles & Jars	5.8%	6.9%	8.2%
Other Glass	<0.1%	1.2%	0.4%
<b>Total Glass</b>	<b>5.8%</b>	<b>8.1%</b>	<b>8.6%</b>
<b>Wood</b>			
Pallets	N/A	0.2%	<0.1%
Lumber	0.6%	1.2%	0.2%
Painted/Treated	0.8%	<0.1%	<0.1%
Stumps/Heavy Sections	N/A	<0.1%	<0.1%
<b>Total Wood</b>	<b>1.4%</b>	<b>1.4%</b>	<b>0.2%</b>
<b>Inert</b>			
Brick, concrete, dirt, asphalt, etc.	3.2%	0.5%	2.2%
<b>Yard Waste</b>			
(includes grass, leaves, small branches)	2.2%	0.3%	2.3%
<b>Special Waste</b>			
Lead-Acid Batteries	N/A	<0.1%	<0.1%
Dry Cell Batteries	N/A	0.3%	<0.1%
Oil Filters	N/A	<0.1%	<0.1%
Other Hazardous Waste	0.1%	<0.1%	1.0%
Infectious Waste	<0.1%	NA	<0.1%
Reusable Waste	N/A	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>0.1%</b>	<b>0.4%</b>	<b>1.1%</b>
<b>Brown Goods</b>			
Electronic Goods	N/A	0.8%	0.8%
<b>TOTALS</b>	<b>100%</b>	<b>100.0%</b>	<b>100%</b>

**EXHIBIT 4-2**  
**ORANGE COUNTY WASTE CHARACTERIZATION STUDY - APRIL 2005**  
**COMPARISON OF RESIDENTIAL WASTE COMPOSITIONS**

Material Components	1995 Composition	2000 Composition	2005 Composition
<b>Paper</b>			
Newspaper/Print	5.3%	4.8%	4.9%
Glossy Magazines	6.1%	4.4%	4.7%
Recyclable Corrugated Cardboard	4.5%	4.7%	2.4%
Non-Recyclable Cardboard	N/A	1.2%	0.7%
Phone Books	N/A	0.3%	0.2%
Paperboard	N/A	5.1%	3.6%
Other Books	N/A	0.4%	-0.1%
White Ledger	N/A	2.0%	1.9%
Mixed Office Paper	1.7%	4.5%	3.3%
Other Paper (includes hardback books)	24.6%	9.0%	13.1%
<b>Total Paper</b>	<b>42.2%</b>	<b>36.5%</b>	<b>34.9%</b>
<b>Plastics</b>			
All Plastic Bottles	2.6%	2.9%	2.4%
Film	4.3%	5.7%	5.6%
All Cups & Tubs	0.7%	2.7%	1.0%
All Other Plastic (includes styrofoam)	4.4%	4.6%	5.9%
<b>Total Plastics</b>	<b>12.0%</b>	<b>15.9%</b>	<b>14.9%</b>
<b>Organics</b>			
Food Waste	11.2%	17.8%	22.2%
Textiles/Leather	3.3%	5.4%	5.1%
Diapers	3.5%	3.5%	4.4%
Other Organics (includes rubber)	8.3%	4.6%	1.3%
<b>Total Organics</b>	<b>26.3%</b>	<b>31.3%</b>	<b>33.0%</b>
<b>Ferrous Metal</b>			
Food Containers/BI-Metal	2.7%	1.8%	1.4%
Aerosols	N/A	0.4%	0.4%
Other Ferrous	2.9%	2.0%	1.3%
<b>Total Ferrous Metal</b>	<b>5.6%</b>	<b>4.2%</b>	<b>3.1%</b>
<b>Non Ferrous Metal</b>			
Aluminum Cans	0.8%	1.0%	0.7%
Aluminum Foil	N/A	0.9%	0.7%
Other Non-Ferrous	N/A	0.2%	-0.1%
<b>Total Non Ferrous Metal</b>	<b>0.8%</b>	<b>2.1%</b>	<b>1.4%</b>
<b>Glass</b>			
All Bottles & Jars	5.8%	4.3%	4.3%
Other Glass	0.5%	0.8%	0.2%
<b>Total Glass</b>	<b>6.3%</b>	<b>5.1%</b>	<b>4.5%</b>
<b>Wood</b>			
Pallets	N/A	0.2%	-0.1%
Lumber	1.9%	1.3%	2.3%
Painted/Treated	1.1%	-0.1%	-0.1%
Stumps/Heavy Sections	N/A	-0.1%	-0.1%
<b>Total Wood</b>	<b>3.0%</b>	<b>1.5%</b>	<b>2.4%</b>
<b>Inert</b>			
Brick, concrete, dirt, asphalt, etc.	2.6%	0.7%	2.2%
<b>Yard Waste</b>			
(includes grass, leaves, small branches)	1.0%	0.9%	1.8%
<b>Special Waste</b>			
Lead-Acid Batteries	N/A	-0.1%	-0.1%
Dry Cell Batteries	N/A	0.2%	0.2%
Oil Filters	N/A	-0.1%	-0.1%
Other Hazardous Waste	0.3%	0.6%	0.4%
Infectious Waste	-0.1%	NA	-0.1%
Reusable Waste	N/A	-0.1%	-0.1%
<b>Total Special Waste</b>	<b>0.3%</b>	<b>0.9%</b>	<b>0.6%</b>
<b>Brown Goods</b>			
Electronic Goods	N/A	0.9%	1.4%
<b>TOTALS</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Appendix E Waste Reduction Calculation for Orange County NC**

Original ten year plan reduction and goal for FY 2001-2002 45% per capita

Original ten year waste reduction goal for FY 2006-07 61% per capita

After considering your government’s current and projected solid waste activities resources population and economic growth will the FY 2007-08 goal change. NO but the date of the goal has been rescinded. There is no year for the goal to be met.

Why? N/A Delayed primarily because the various local governments have not determined a timeline for implementing an integrated solid waste plan.

**CALCULATING and SETTING A NEW 2017-18 SOLID WASTE REDUCTION GOAL**

FY 2006-07 tonnage landfilled MSW

Origin of Waste	Tons	Comments
MSW landfilled in Orange County	57,298	
C&D landfilled in Orange County	16,549	Includes LCID, mobile homes, water plant alum sludge
MSW landfilled outside Orange County	5,555	
C&D landfilled outside Orange County	8,674	Excludes C&D recycled at MWPs
Total tons disposed from Orange County	88,060	
Waste per capita (pop = 123,776)	0.711 tons	Base year 1.36 tons/capita -- <b>2006-07 Waste Reduction Rate: 48%</b>

Establish a FY 2016-17 per capita waste reduction goal by determining

FY 2016-17 population projection (from State census data) x per capita estimate for that year (0.711 tons), assuming no further waste reduction from FY 2006-07 = 99,369

FY 2016-17 population projection 139,760 x per capita estimate (0.53 tons) projected goal in tons = 74,073

Projected **additional** tonnage to be managed via recycling, reduction, composting, etc, not landfilled to meet 61% goal in that year = 25,296,

## Appendix F

### Plan Elements

#### L. Reduction at the source,

Source reduction while generally included in most waste management discussions and education/outreach in Orange County does not get particularly promoted as an element of the plan. Subcomponents of source reduction can include:

“Smart shopping” buying in bulk , bringing your own bag, mug or other carrying device, etc. Many local stores are now promoting bring your own bag either through parent companies’ policies, eg. Whole Foods Market is eliminating plastic bags after April 22, 2008 and they reward customers for using their own bags at five cents credit per bag, applies at store in Orange County, NC.

Xeriscaping – recent and predicted droughts are taking care of this issue as water utilities and other entities directly concerned with water and wastewater join the battle to reduce waste on that front. Xeriscaping means promoting less growth of yard materials, thus less yard waste to manage. Backyard composting, which Orange County does promote, also plays a significant role in waste reduction. This is covered in more detail in section 4 below on composting and mulching.

Industrial source reduction is generally driven by profit motivation. We have minimal dialog with the small amount of industry in Orange County. The Mattress Manufacturer Kingsdown has reduced their waste dramatically, zero waste is their corporate policy, it was not created by influence from local government. This is generally true; our efforts have focused more on providing recycling services and assistance related to setting up recycling programs.

Junk Mail Reduction: Orange County does have a long-term commitment to Junk Mail Reduction and we always include a mention of it in waste audits and in our general literature along with the Junk Mail Terminator card we send on request. We also urge various local government departments within Orange County to have an active junk mail reduction program through their individual department actions to get employees to identify senders of unwanted mail and reduce that by writing specifically to those agencies and requesting to be removed from lists. We are not aware of any departments or divisions within any of the four local governments in Orange County, aside from the Solid Waste Department, that provides junk mail termination services in their department.

Backyard composting: Orange County has historically operated a very strong backyard composting program based on three elements: an annual compost bin sale where bins are sold at cost, workshops and training sessions held at the County’s compost demonstration sites and on the premises of interested schools, churches and other organizations, ongoing education and advocacy through various channels including print articles, web page and radio shows. This is possibly the area of waste reduction in which the County has the highest level of involvement on an ongoing basis. Will begin permanent bin sales in new office spring 2009.

Incorporation into Waste Audits: The County offers waste audits to any non-residential or commercial entity in Orange County at no cost. The audit results routinely include information and recommendations regarding waste reduction including junk mail reduction, packaging reduction, smart shopping for the office, double sided copying. etc.

**Solid Waste Collections**

Solid Waste is collected in a variety of ways in Orange County as summarized in the table below. The major change in solid waste handling in the past four years has been the addition of automated residential collection in Carrboro in 2003-04 which enabled the Town to shift members of its waste collection staff to other duties as a single person operates the automated truck where formerly two to three employees operated the residential garbage routes. About 10% of the routes in both Carrboro and Hillsborough which is automated as well, are inaccessible to the automated truck and must be served manually with larger crews.

**Table F-1 Solid Waste Collection services in individual jurisdictions, by sector**

<i>Jurisdiction:</i>	<i>Sector</i>			<i>Comments</i>
	<i><u>Residential</u></i>	<i><u>Multifamily</u></i>	<i><u>Commercial/ Non-residential</u></i>	
Carrboro	Town-collected in 95 gallon carts, 90% automated. Materials not in carts are not collected.	Town-collected, tax supported, dumpsters furnished by complexes. A few w/ private compactors.	Mix of 50% Town and 50% private services, Fee-supported. Town does not furnish dumpsters	Stable mix of public and private after loss of 50% in first year of fee.
Chapel Hill	Town collected in 68 gallon carts, semi automated. Collect all materials outside carts too.	Town collected supported by a mix of fees and taxes, first collection free. Compactors collected privately are growing portion of waste stream.	Mix of 90% public, 10% private. Mix of tax and fee supported, Town does not furnish dumpsters	Some shift to privates due to flexibility of services.
Hillsborough	Town-collected in 95 gallon carts, 90% automated. Materials not in carts are not collected.	Part of Town non-residential franchise. Fee-based. Dumpsters furnished by franchisee or others.	Part of Town non-residential franchise. Fee-based. Dumpsters furnished by franchisee or others.	Over 90% in franchise. All franchised waste delivered to Orange County Landfill, per contract.
Unincorporated Orange County	Tax supported solid waste convenience centers used by est. 75% of households. Remainder w/ unregulated private services, laissez-faire.	All private, laissez faire collection. Few multifamily in unincorporated areas.	All private laissez faire collection. Some small enough for residential style service.	Waste delivered to a variety of destinations including Orange County landfill
UNC	Incorporated into single private contracted service with all other bldgs	Dormitories incorporated into single private contract	All buildings part of single private contract	Waste delivered to Orange Co. landfill per contract



**Recycling and Reuse**

Since inception in 1987, Orange County and its towns have offered and supported a wide-variety of recycling and reuse services. This section will focus primarily on services offered through the Orange County Solid Waste Management Department and provide a few details for each program from FY 2006-07. Larger scale programs operated by others will be noted as part of the overall approach.

**Table F-2 Programs operated or contracted by Orange County**

Program	Units Served	Tons in 06-07	Comments
Urban Curbside	18,000 single family and duplex, urban households in all three Towns	4,123	Weekly, service by contractor in all incorporated areas, two-stream. Added mixed paper November 2006, 8% tonnage increase v. 2005-06
Rural Curbside	11,10 single family and duplex, rural households	1,433	Bi-weekly, service by County crews to 65% of unincorporated area homes, two stream. Added mixed paper Nov. 2006. 21% tonnage increase v. 2005-06.
Multifamily	13,500 apartments and condominiums	1,081	Over 95% of all complexes served by County crews. Switch to two-stream and addition of mixed paper August 2007. 5% tonnage increase v. 2005-06
Dropoff sites	10 sites, five staffed, five unstaffed. All units have some access to at least the unstaffed sites	5,209 estimated	Includes cans, bottles, news, magazines, mixed paper, corrugated cardboard, some of which comes from private sources or delivered to recycling area at landfill. 4 of 5 staffed sites also have salvage sheds for exchange of usable goods.
Food Waste and Animal Bedding	Serves 30 sites including those at UNC labs & cafeterias	2,285	Includes restaurants, grocery stores, cafeterias, lab animal bedding. By contractor with on-board scales.
TRIP hazardous & toxic wastes	Includes oil, filters, antifreeze, batteries, electronics, paint, pesticides, chemicals,	642	Various locations, depending on program: retail outlets for batteries, landfill for hazardous wastes, convenience centers for everything EXCEPT paints, pesticides and chemicals, Businesses may bring at no charge.
Commercial program	140 businesses, predominantly bars & restaurants	638	All materials source separated, high demand for more service due to new law requiring bars to recycle their bottles and cans. More non-bars being serviced now.
(local) Government Buildings	All Town and County buildings	85	All paper and all bottles and cans. Three stream now w/ news separate from other paper.

Programs by others:

UNC offers comprehensive, campus wide recycling programs operated primarily by contractors with some in-house operations.

**Table F-3 Total recycled at UNC Chapel Hill in FY 2006-07 without coal ash**

Material	Tons
Paper	1,742
Cardboard	854
Cans and Bottles	260
Organics (food, animal bedding, yard waste, sawdust)	1,301
C&D	161
Other	12
Total	4,330

Programs by Others

Many other programs operate throughout Orange County including separately contracted ones at each of the two public school systems, reuse/resale thrift stores operated by PTA Thrift Shops, Club Nova, Orange Congregations in Mission, Habitat for Humanity Hand-Me-Ups store and, several private recycling companies serving various office complexes and other locales not getting service from the County's program.

There is large-scale private collection of corrugated cardboard from dumpsters at individual businesses. This program is partly driven by the ban on landfilling corrugated cardboard in Orange County. There are the more economically driven efforts to recycle cardboard at grocery stores and scrap metal from auto repair shops and similar efforts. No regular attempt is made to collect data on the tonnage that is diverted through these systems and programs.

## Composting and Mulching

Orange County operates a successful mulching operation to manage yard waste collected by municipalities, contractors and individuals and delivered to the Orange County landfill. This program uses a large Peterson Pacific horizontal grinder with magnets to grind between 7,000 and 10,000 tons of yard waste and similar vegetative debris each year. Last year 8,145 tons of yard waste were converted to mulch. The resulting mulch ages for at least sixty days to fix the nitrogen and is turned at least once during that period, prior to sale. It is sold to the public by the three cubic yard scoop. The County charges \$15 per ton incoming yard waste (or clean wood waste) and \$20 per three cubic yard scoop outgoing. That averages \$37.20 per ton in gross revenue, covering all costs of operating the program including amortized grinder costs. About 1/3 of the incoming tonnage is lost as water weight before the mulch is sold. The product is very popular among citizens and landscapers. The County sells and delivers bulk loads of 20,30, 40 or 100 cubic yards and includes a delivery fee to cover its costs within ten miles of the landfill. Mulch availability is advertised semi annually during spring and fall seasons in local papers and on radio.

Orange County also requires diversion of unpainted, untreated wood waste from landfilling and that material is chipped and sold as boiler fuel or feedstock for colored mulch made by others. That material is accepted at \$15 per ton and sold for mulch feedstock or boiler fuel for an average of \$8.00 per ton. Last year the County diverted 1,5,30 tons of clean wood waste.

Compost Sold by Orange County at the landfill is produced by Brooks Contractor, the County's contract hauler for food waste and animal bedding, at their licensed site in Goldston NC. Annually the County sends about 2,200 tons of organic waste to Brooks, representing about 4% of their inputs and last year sold 578 cubic yards of compost at about one cubic yard per ton.

The County operates two permanent backyard compost demonstration sites at the Chapel Hill Community Center and the Cooperative Extension office in Hillsborough. As mentioned above in the waste reduction section, there is also an active outreach program through workshops, bin sales and ongoing publicity about backyard composting and vermicomposting.

Several private mulching and composting operations provide various organic landscaping products throughout Orange County. Some are farmers with surplus manure that they sell or give out; others are in the landscape products business making bark mulch and the like. No consistent data is available on these operations.

## **Incineration**

Orange County in its 1997 joint regional solid waste study with Durham and other investigations since then has rejected mass burn incineration of waste as an alternative means of waste management. In December 2007, the County (with Towns' representation) Solid Waste Advisory Board requested that the Board of County Commissioners request consulting help to review up to six alternative technologies to manage mixed MSW. That report could once again, consider incineration as it now appears to be regaining some interest in this country. That report will not be completed until later in 2008.

## **Transfer of Waste Out of the Area**

In 2001, the Board of Orange County Commissioners adopted an ordinance declaring that another MSW solid waste landfill would not be built in Orange County, that inferred that a transfer station would have to be built in order to manage MSW generated after the landfill was projected to be full. Now that date is spring 2011 The County-owned C&D site is projected to be available for at least twenty years at the current and projected rate of use.

In March 2007, the BOCC initially decided the transfer station would be built on the site of the closed landfill. That decision has now been rescinded that decision and they have instead opted to conduct a site search process to find a site of a minimum 25 acres within Orange County. The BOCC itself is leading this process with the technical assistance of Olver Engineering a solid waste consulting firm and solid waste staff. That site search process is projected to be complete by the end of calendar 2008. The final meeting of the current sitting board is slated as the decision date of November 18, 2008.

Once a site is selected, the County will begin the process to permit, design, finance and construct the transfer station. At that point, various operational decisions such as if the County will own its own transfer fleet, where waste will go, how it will be managed, will the site be used for other activities e.g. transfer of recyclables etc. will be determined. Funds are not now earmarked for transfer station construction. Some debt-financing instrument will be selected.

## **Disposal Capacity**

Orange County has approximately three years of solid waste disposal capacity remaining at its Eubanks Road MSW lined landfill. The County retains a surveying firm to fly the site and prepare a contour map of the landfill. The remaining landfill volume is revised annually. The remaining capacity is the difference between the most recent topography and the final permitted contours (minus final cover). The volume in cubic yards can be converted to tons. The County has worked to decrease its solid waste and improve its waste compaction and uses other innovative means to conserve landfill space. Due to increased biological activity at the MSW landfill, there has been significant subsidence at side slopes, which were reopened to allow more waste disposal in the collapsed areas. The County has also purchased the largest compactor available to further compact the waste received.

In the past the County has:

- Banned landfilling of commercially generated corrugated cardboard, estimated savings of a year of air space,

- Converted from using only soil as daily cover to using PosiShell, an alternative daily cover which used far less air space, saving an estimated additional year,
- Diverted C&D to a separate C&D, unlined facility beginning in 1995 when the current lined MSW landfill was constructed, saving at least an estimated one-third of the remaining capacity (based on C&D being 1/3 of the total waste by weight),
- Generally increased recycling programs to reduce waste overall,
- Passed a Regulated Recyclable Materials Ordinance (RRMO) also banning scrap metal, clean wood and cardboard and requiring that those be recycled as a condition of hauling or disposing waste in Orange County.

These measures extended landfill life from the initial projected closure date of 2004 to 2011. Due to the geometry and relatively small footprint of the current MSW site, little new space is projected to be gained, even with pending possible addition of corrugated cardboard to curbside recycling and addition of other plastics to the recycling drop-off sites. .

The original 11-acre C&D landfill at the north side of the County solid waste property (see map in Appendix C) was filled and capped in 2005 and a new 13-acre area for C&D opened on the existing landfill property. Its life was originally projected at 13 years, at current rates of use. With implementation of the RRMO, subsequent loss of 50% tonnage pushed the projected closure date to twenty years from opening date. In March 2008, a ruling by the State Division of Waste Management on the nature of what was allowed to be disposed in C&D landfills reduced the projected amount by 50%, thus potentially doubling the life of the C&D landfill.

## Education in Community and Schools

Education is a hallmark of Orange County's program success. We provide a very broadly based education and public information effort. Through it we won the national award in 2004 for best recycling education program in the country from the National Recycling Coalition and in 2003 the North Carolina Association of County Commissioners Award for Outstanding Public Education. In 2008, the County won a Sustainability Award from the national Glass Packaging Institute and The Carol Bond/Bills Evans Toxicity Reduction Award from the Carolina Recycling Association.

Elements of the program include the following:

- Regular display and classified advertising of all Orange County recycling programs in primarily print media, but also on radio and most recently in a billboard at the Orange County Speedway in Rougemont NC, some sample ads are attached.
- Program materials in English and Spanish at kiosks at all recycling sites throughout the County and in select local government buildings including main town or county offices, County library, planning and inspections office where there is significant citizen traffic.
- Public fairs and festivals where the recycling presence includes an information booth as well as the physical recycling presence of bins and carts to provide recycling opportunities
- Annual postcard mailing to all rural recycling curbside customers to inform them of the annual bi weekly schedule for their route. Other mailings alerting the public to changes in their routing or holiday reminder cards for those whose recycling days fall on Christmas and New Years Day.
- Detailed signage on containers at all recycling dropoff sites and directional white-on-green street signs to lead people to the sites from key intersections throughout the County
- Decals on each recycling bin or cart with precise instructions in English and Spanish with pictures. We also provide recycling instructional materials in Japanese, Korean and Mandarin Chinese. We have other materials in Burmese Karen language and make other translations as special needs arise.
- An actively used web site receiving 9,000 unique visitors (as opposed to 'hits' or pages viewed) per month (March 2008).
- Tours of landfill and presentations about solid waste on request for school groups, civic groups, informal groups, training purposes (about 100 last FY)
- Monthly articles in Chapel Hill Herald and Weaver Street Market Newsletter with periodic reprints in News of Orange where pertinent to rural, non-Chapel Hill oriented readership,
- Annual Waste Matters Newsletter mailed to all addresses in Orange County providing information about all programs the County offers and new developments in Solid Waste.

**Special Wastes Including Tires, White Goods,**

Tires are managed through a contract with US Tire. The County receives tires from tire dealers and individuals, predominantly at the landfills and from landfill at the five Solid Waste Convenience Centers at no charge, as there is an advanced disposal fee. The County provides a loading area and tires are left out for the contractor to efficiently stack in the vans in which they take them off. Tires are now mostly sold for tire derived fuel and some are sold as used tires or retreads. The County accepted 1,560 tons of tires a year.

White goods are managed at the landfill where staff extracts Freon from incoming refrigerators or window air conditioners then those are piled in 40 yard rolloffs for hauling to market by staff. Contract haulers were not reliable or were too expensive, thus the County now hauls more of its own white goods now, and sometimes contractors are used to haul. White goods are brought in at no cost by contractors, by Town trucks from residents of the three Towns and individuals. Individuals may also self-haul white goods to the five convenience centers where there are rolloffs dedicated to their collection. The County accepted about 340 tons of white goods last year.

Scrap metal is banned from landfilling and accepted at no cost at the landfill. Residents may also drop metal off at the solid waste convenience centers deposited in rolloff containers from where County trucks haul it to the landfill. Last year the County recycled about 800 tons of scrap metal.

Clean wood waste is banned from landfilling and accepted at \$15 per ton at the landfill. Residents may also dropoff clean wood at the solid waste convenience centers deposited in rolloff containers from where County trucks haul it to the landfill. There it is ground up and sold as a boiler fuel or mulch product to a wholesaler who dyes it red and resells it to the County or private parties.

Motor oil, oil filters, batteries, antifreeze and electronics are accepted from residences at all five solid waste convenience centers and from any Orange County business or resident at the landfill. Last year the County's electronics recycling rate exceeded five pounds per person, highest in North Carolina, according to NC DPPEA and possibly in the nation, although that is more difficult to verify.

Hazardous waste including paints, pesticides, cleaners and fluorescent tubes are accepted six days a week at the permanent facility at the Orange County landfill from all residences and those small businesses generating under 220 pounds per month. Last year the County recycled over 640 tons of hazardous materials. The total from all types of materials increased 8% from the previous year. The tons recycled at the HHW facility decreased due to more bulking of paints and fewer cans being shipped off partly full. A higher volume of empty paint cans was recycled or disposed locally, reducing overall costs and increasing efficiency.

## Illegal Disposal and Littering

Currently the County provides regular cleaning of roadsides the full length of Eubanks Road, the road the landfill is on, and Rogers Road, the adjoining road running to the south. The County also provides roadside cleanup weekly along Walnut Grove Church Road in the vicinity of the new Solid Waste Convenience Center there, which is experiencing a lot of use since the closing of the Highway 57 site.

Periodically a report of an illegal tire dump is referred to the Solid Waste Department, which has led or directed the cleanup, but those have been almost all resolved. The Department will respond to occasional illegal dumping along Eubanks and Rogers Road and clean those up, regardless of the origin of the waste, as part of being a good neighbor.

The Department is also positioning itself to handle more illegal burning complaints, but has not yet been formally authorized to prosecute those incidents. Illegal dumping or waste disposal on private property is handled jointly by the Planning Department and the Solid Waste Department, initially as a zoning violation matter. Generally we seek civil remedies and avoid the criminal court system due to lack of support by law enforcement agencies and busy criminal calendars. However, since I've been here...we've been fortunate to resolve everything at the staff level. The Fire Marshall does not handle illegal burning complaints directly, but refers them to solid waste staff. Illegal burning does continue to be a sporadic but significant problem the County must address in a more responsive manner.

Overall, the Solid Waste Department has requested that its staff be authorized as environmental enforcement officers, which would give them the authority to directly prosecute litter and illegal dumping violations rather than go through the Sheriff's Department or other channels. During the first three months of calendar 2008, twelve incidents of illegal dumping or burning have been successfully handled by the Solid Waste Department. A new enforcement position proposed to be added in FY 2008-09 will be partly responsible for responding to illegal disposal complaints.

Town forces often handle littering within Town limits. Some items such as a lead-acid battery do occasionally get left curbside and historically, the Solid Waste Management Department has stepped in informally to handle these orphan wastes. Very few incidents like this are not handled effectively by the Towns. Towns also generally accept or collect materials abandoned in public rights of way, particularly after the massive annual spring move out. For illegal dumping at recycling dropoff sites, those whose waste is identified by staff are sent a notification and a copy is sent to the Police Department in that jurisdiction. The County performs the cleanup. There have been no known repeat offenders, once they get warning letter from the County that they have been identified.



## **Purchasing Recycled Products**

The Town of Chapel Hill has a formal policy adopted in 1996, that requires purchase of paper with up to 20% post consumer recycled content. They report that is now up to 30% post consumer paper, except brown envelopes. It follows this policy overall, certain exceptions are made when the product is too costly as with certain envelope types. Construction materials with recycled content are incorporated into most new building projects to help meet LEED standards and conform to the Town's overall policy to buy recycled products.

The Town of Hillsborough reports informally that most of the paper they purchase has recycled content and that they require leaf bags to be made from paper or biodegradable plastic to expedite bagged residential leaf collection at the curb. Those bags are included with vegetative waste disposal for composting.

Town of Carrboro has no formal 'buy recycled' policy, Their purchasing manual states that they encourage the purchase of recycled products. They buy 10% recycled paper. They also recycle toner cartridges and computers so these are no longer taken to the landfill.

Orange County's purchasing department does not have a formal buy recycled policy but the purchasing officer reports that all copier and printer paper has 30% post-consumer waste, all envelopes printed by corrections enterprises and all contract printing jobs also are specified to have recycled content. All construction materials, where practical have recycled content and the County buys plastic lumber parking stops. All disposable cutlery and plates used at County events are biodegradable. A side note: they were purchased in boxes of 1,000 but there was resistance to handling the items, so now they are bought in bulk but in sub-packets of twenty units to avoid manual handling of each utensil by someone other than the end user.

New County buildings are being built to a highly efficient energy and water use performance standard, but are not seeking LEED certification generally.

**Disaster Response DRAFT****Orange County  
Emergency Operations Plan  
Solid Waste Department Mission**

In the event of any type of disaster, natural or otherwise, in which Orange County (OC) would declare a State of Emergency or activate the County's Emergency Operating Plan, the Solid Waste (SW) Director, in coordination with the County Manager, will make a decision on the need for the SW Department to implement any SW Emergency Plan necessary for debris handling.

If directed so by the County Manager, the SW Director will start notifying key SW staff using the Employee Contact/Call Back List located in the DEOP Resource Manual. Once the call back procedure has been activated, all necessary personnel will be requested to report to the Orange County Landfill for duty assignments. Designated staff will make every effort to respond to the landfill and assess the operational status and determine if the landfill can be operational within the necessary time frame needed to start accepting waste as required. If the landfill is inaccessible or unable to operate, the SW Director will initiate the necessary programs to provide the County with the required essential services.

The SW Emergency Plan addresses the disposal needs for Municipal Solid Waste (MSW), Construction and Demolition (C&D), Vegetative/Land Clearing Waste, and House Hold Hazardous Waste and provides guidance on temporary site selection and the requirements of the State of North Carolina relating to each of these site selections. Each category above has its own Emergency Operations Plan and lists the necessary requirements needed to locate/operate a temporary site.

Under these emergency circumstances, the day-to-day operating conditions of each site will be monitored to insure compliance with all state rules and regulations.

Landfill Staff will also concentrate to restore any disruptive situation to the OC Landfill as soon as operational possible. Once normal landfill operating conditions are achieved, any temporary site activity will be discontinued as soon as operational possible. At that time each temporary sites will be closed according to state regulations.

During the operations of all temporary sites, any pre-negotiated Contract or agreement with vendors will be assessed by the County Purchasing Department to insure enactment of such contracts or agreements on a timely basis to provide the necessary service to OC. The primary contracts or agreements in place will be for the grinding of vegetative/land clearing waste, and the hauling and disposal of MSW and/or C&D material. The Department along with Purchasing will review these contracts as needed and make any adjustments necessary to insure the readiness of the department to activate these contracts or agreements.

In the event the SW Director is mandated by the County Manager to enact the Emergency Operations Plan, the following will take place.

1. The SW Director will contact specified personnel according to the Employee Contact/Call Back list in Resource Manual.

2. The SW Operations Manager, Landfill Operations Manager, and, if necessary, the Recycling Operations Manager will report to their respective duty stations and assess the situation of the Landfill facility. If the landfill is inaccessible, they will report back to the SW Director their findings and allow the director to initiate one or more of the emergency plans as needed.
3. If the landfill is accessible but not operational, Senior Operations Staff will notify and direct SW Staff as needed to make the site safe and operational for public use in as a timely manner as possible.
4. If the landfill is inaccessible, the SW Director, along with the County Managers approval, may site all necessary remote sites. Senior Staff will proceed with the establishment of such sites according to the SW Operational Plans included in this manual to insure the needs of the County. It is highly recommended that if all possible all remote sites were sited on property owned by OC. If no county property is available, the County attorney will need to secure a lease from a private party as soon as a piece of property is operational designated.
5. If remote sites are to be sited, certain vendors will be contacted as soon as possible to provide the necessary equipment to operate each site. This equipment will primarily relate to the operational needs of the remote site but will mainly include the following equipment:
  - Wheel Loaders
  - Track Loaders
  - Track Excavators
  - Small Dozers

While this equipment is readily available to rent during any time of the year, during times of natural disasters they become more difficult to rent. Therefore notification of vendors who handle this type of equipment, such as Caterpillar, Interstate Equipment, John Deere, Hertz Rental, etc. must be made as soon as a decision is made to operate any/all remote sites to insure the availability of any necessary equipment. While the current inventory of the SW Department does include this equipment, it will be used in readying the landfill for normal operation and not be available for remote site operation.

6. The Director will request that the County Manager activate contracts or agreements in place for handling specific waste and notification of these vendors will be made.
7. The Sheriff's Department will be contacted and requested to coordinate traffic at these temporary sites.
8. The SW Departments Outreach personnel, will provide the County's Information Officer the information necessary to start a public information campaign notifying the citizens of the county as to the locations of these temporary sites and operational issues relating to each site.
9. If necessary the SW Director will request that the County Manager allow the temporary suspension of any relevant County Ordinance issues relating to the debris that may

accelerate and/or ease the clean up process of the event. The SW Director will work with all governmental agencies, Federal, State, and Local, to assist with the necessary documentation needs for possible reimbursements or tonnage/cubic yard measurements for billing purposes.

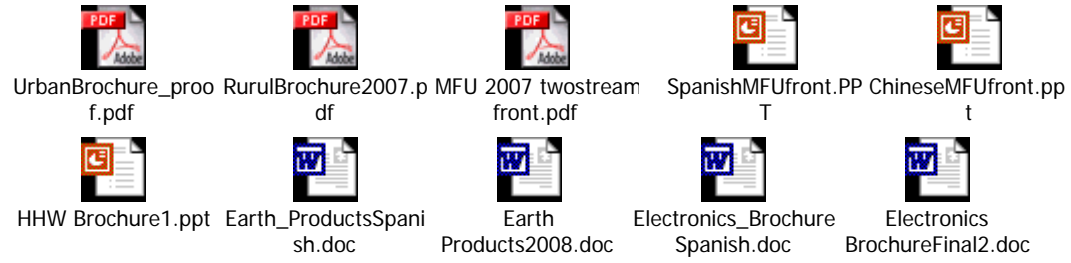
10. The Solid Wasted Director in coordination with the County Manager will determine how long each remote site will operate and clearly provide information to the public as to the closing of any site.
11. As soon as possible, the OC Landfill will commence operations under normal operating conditions. Some remote storm debris sites may continue to operate even though the OC Landfill is open for normal business, due to the limited space for vegetative waste to be processed at the Eubanks Road Landfill.
12. All remote sites will be closed according to state and local regulations as listed in the site operations plan. Also any other issues within a lease agreement between the County and a Private owner will also be addressed.
13. The SW Director will recommend to the County Manager when operations of the OC Landfill can safely re-commence and the citizens can safely access and use the landfill.

*Waste Industries verbal agreement to take Orange County waste at their transfer station.  
Nothing formal yet.*

*End Appendix F*

APPENDIX G

Supporting documents: brochures, flyers, etc. to be attached (most are available electronically).



## Appendix H

### Departmental Goal:

61% per capita waste reduction.

### Recycling Division Objective and Measures of Outcomes

#### **Objective**

The Orange County Department of Solid Waste Management's Recycling Division, also known as Orange Community Recycling, uses a combination of in-house staff and contractors to divert recyclable and toxic materials from Orange County Landfill. The recycling program's goals are to provide high-quality, efficient recycling services to the citizens, businesses and institutions of Orange County, and to maximize diversion of recyclable material from the landfill. Additionally, the program strives to provide safe, convenient, and cost effective options to reduce the toxicity of the waste being buried in the Orange County Landfill, to facilitate the removal of hazardous waste from the environment at large, and specifically to protect local ground water and waterways.

- Contractors handle urban curbside, food waste, oil, oil filter, and antifreeze collections and household hazardous wastes.
- Departmental staff handles drop-off site recycling, multifamily recycling, government building recycling, battery recycling, electronics recycling, commercial glass collection, and rural recycling curbside recycling collection.

#### **Outcomes**

- Urban residential curbside recycling: Implement the collection of mixed paper at the curb. Distribute second recycling bin to each household serviced by the program to facilitate dual-stream service. Provide recycling services to the new homes anticipated in this sector next year, including those formerly unincorporated households that have been annexed.
- Rural residential curbside recycling: Implement the collection of mixed paper at the curb. Distribute second recycling bin to each household serviced by the program to facilitate dual-stream service. Expand rural curbside services to 1,000 new homes over the course of the year; including new infill homes within the serviced areas next year.
- Multifamily recycling: continue effort to reach apartment complexes in Hillsborough, expand multifamily recycling to eligible units. Add new multifamily sites as properties are developed.
- Drop-off site recycling at six unstaffed sites and six staffed Orange County Convenience Centers: Maintain high level of service at drop-off sites, strive to keep contamination low, and minimize impact of illegal dumping by conducting site visits and weekly site clean-ups.
- Hazardous Household Waste collection: Continue and build upon success of full-time program and encourage Conditionally Exempt Small Quantity Generators (CESQGs) of Commercial Hazardous Waste to use the program by offering free disposal (disposal fees to be paid by County).
- Commercial Recycling Program: Continue to service and collect over 700 tons of glass, metal, plastics, and paper from over 100 businesses while keeping quality of marketable product high.
- Electronic Recycling – continue to seek significant increase in diversion and seek opportunities for continued program efficiency.
- Government office recycling program: Continue every other week collection from governmental office buildings. Add additional buildings as need arises. Expand service to local government facilities as acquired and constructed.
- Food Waste Program: maintain collection of animal bedding; expand service to new sites with objective of expanding amount of material diverted overall by 350 Tons.

Administrative Division Objective and Measures of Outcomes*Objective*

To provide administrative, educational and financial support for all departmental operations, Orange County Manager, and various Boards and Commissions as necessary.

**Outcomes**

- Public education and outreach for landfill, recycling, waste reduction and other solid waste services: Provide annual newsletter, rural curbside recycling route calendar cards, rural reminder cards, and ongoing program advertising and presentations. Update all brochures annually and create new brochures as needed. Maintain and continuously update department website. Increase outreach to non-English speaking populations in the County. Help city and county government improve their internal recycling programs. Provide teacher training in solid waste management at public schools in the County where appropriate. Staff all major local festivals and similar events with solid waste information table.
- Provide at least 75 outreach presentations and landfill tours.
- Place at least 600 print and radio advertisements.
- Produce at least 42 newspaper articles.
- Conduct door-to-door outreach at a minimum of ten underperforming apartment complexes.
- Produce at least two series of radio Advertisements.
- Manage implementation of new WRRRF.

Landfill Division Objectives and Measures of Outcomes*Objectives*

- To provide a high quality, cost-effective and efficient service to our customers, and to comply with all State and Local regulations.
- To provide enforcement and material management relative to the RRMO
- Assist the Towns and County with the Solid Waste Management Plan Development Review process to ensure that adequate recycling infrastructure within all County developmental projects is consistent with waste reduction goals

*Outcomes*

- Continue to enforce the ordinance banning landfilling of recyclable construction materials and requiring their source separation.
- Limit, through waste reduction and recycling, the amount of construction and demolition waste entering the landfill.
- Incorporate adequate recycling infrastructure into all development projects within the County and municipalities.
- Issue permits and licenses.
- Issue Regulated Recyclable Material

## Appendix I

### **Financial plan to be finalized as part of the final, integrated solid waste management plan.**

The Solid Waste Department operates predominantly as an enterprise fund. Various sources of revenue contribute to the fund including landfill tipping fees (31%), 3-R Fee (31%), recycling materials sales, mulch sales, penalties and licensing fees, interest on income, state reimbursements for tires and white goods (9%), fund balance appropriation 6%, CIP 4%, General fund for Sanitation 19%.

The 3-R Fee is a unique mechanism to fund recycling in Orange County. It is a tiered fee created in 2002 and levied on each improved property according to the type of recycling services provided. All improved properties, regardless of type, have a basic fee of \$37 per unit per year. In addition, if the property receives weekly curbside recycling, it incurs a \$44 additional cost, biweekly curbside, \$26 annual cost or multifamily cart type service an additional \$19 per unit cost. That revenue funds approximately 77% of recycling program operating and capital costs. The remainder is covered from recycling revenues and landfill fund tipping fees.

Addition of the County's Sanitation Division to the Department has created an expense and corollary source of revenue from the General Fund, which is earmarked specifically to cover costs of operating the convenience centers as well as County school and County government waste collections (\$2,168,090) FY 2007-08 budgeted. As operations become more thoroughly integrated, separating all funding will be more of a challenge, but expenses will continue to be borne proportionally to services financed. If the convenience centers were to become partially or completely fee-supported, the funding sources would be reevaluated. If costs to improve convenience centers improve waste and recycling management then costs will be allocated accordingly.

Other challenges for future financial planning include financing a broad public commercial recycling effort, determining if rural franchised waste collection should be financed through (not by) the County, building a transfer station, major expansion of commercial recycling, modernizing solid waste convenience centers and landfill gas recovery. The latter is likely to be undertaken by the parties interested in using the gas for energy. The current solid waste work group will develop long term financing recommendations.