

Memorandum

To: Bonnie Hammersley, County Manager

From: Gayle Wilson, Solid Waste Management Director

Subject: Options for the Disposal/Recycling of Mattresses

Date: May 27, 2016

The Solid Waste Management Department has received a request to explore alternative means of mattress and box spring disposal and/or recycling for Orange County residents. There is a perception that disposing of mattresses is inconvenient and that county government should consider other means for handling them.

History

In 1993, Orange County converted from non-staffed Waste and Recycling Centers (W&R) to staffed Centers. Materials, other than household “trash” were placed on the ground for collection, including mattresses. The materials were then collected either by hand or by use of a skid steer loader and loaded into dump trucks for hauling to the county landfill. This method of collection resulted in both collection and labor inefficiencies as well as high injury risks to employees.

During FY 2001-02, roll-off containers were installed at the High 57 Center for materials other than household “trash” (bulky items) with the installation of containers at the remaining Centers to follow soon thereafter. The roll-off containers were hauled to the county landfill for disposal.

Waste and Recycling Centers stopped accepting mattresses and box springs on June 30, 2013 with the closure of the Orange County Landfill. On July 1, 2013, Orange County began a recycling program for such at the Eubanks Road facility location, hauling those mattresses unfit for recycling to the Durham transfer station for disposal. A charge of \$10 per mattress/box springs was instituted to help fund the recycling and/or hauling for disposal.

The Towns of Carrboro, Chapel Hill and Hillsborough have declined to participate in the county mattress recycling program and haul the mattresses that they collect directly to the waste transfer station. UNC-CH delivers about 60 mattresses to the county program annually, but for mass dorm replacements makes special alternative arrangements. UNC Healthcare indicated that they dispose of mattresses very infrequently and do not recycle them. They will further examine the ultimate disposition of discarded mattresses and advise the SWAG of their conclusions.

Recently, the N. C. Department of Transportation – Highway Maintenance Division in Hillsborough was contacted regarding mattresses/box springs illegally dumped along Orange County right-of-ways since July 2013. According to John Howell, Highway Maintenance Engineer, there has been no noticeable increase or decrease in recent years and he estimates that his crews collect about 1-2 mattresses per month from right-of-ways throughout the county.

The Solid Waste Management Department receives 2-5 calls per week asking how to dispose of mattresses.

Current Quantity Managed/Budget

From July 2013 to March 2016 the county has received an average of 187 mattresses/box springs per month at the Eubanks Road landfill facility. About 61% are recycled with the remainder hauled for disposal at the waste transfer station. Eighteen thousand dollars (\$18,000) are budgeted annually in the Recycling Division to fund mattress recycling. Revenue from the \$10 fee is estimated at about \$23,000 annually. Disposal costs are incorporated into the Sanitation Division tipping fee account.

Estimated Annual Cost of Current Program = \$36,000

Estimated Cost Net of Revenue = **Loss of \$13,000**

Special Handling Required

Mattresses are universally considered a “special handling” type waste in the solid waste industry. It has long been a solid waste industry best practice to not place mattresses or box springs into compaction equipment; including compacting collection trucks or stationary compactors like those at Walnut Grove Church Road W&R. The wire becomes entangled into the compacting mechanism and requires considerable time and effort to cut the wire and remove it, resulting in avoidable expense and equipment down time. County solid waste staff recently contacted vendors of stationary compactors and compacting collection vehicles to inquire and/or verify their ability to handle mattresses and box springs and both responded that damage could result and that manufacturers as well as equipment service departments strongly recommend against trying to compact mattresses. The stationary compactor vendor stated that shredding was the best option but will cost an additional \$80,000+ per compaction unit, plus an undetermined amount of associated maintenance expenses.

Mechanical handling equipment such as skid steers, fork lifts, etc. are unable to grab, rotate and/or stack efficiently in a roll off container, box truck or other constructed area. If not methodically stacked/loaded into a truck or roll-off container the mattress and/or box springs create bridges which lead to sizeable air pockets. Thus, hauling efficiency is lost.

In order to load mattresses for maximum volume load in a roll-off container or truck bed it is necessary to manually move them. Larger mattresses can be simultaneously heavy and unwieldy. If wet they become quite heavy. One person can handle a twin mattress, but two persons are required to safely handle queen and king size mattresses. Some are badly soiled and close handling is avoided.

For Disposal

For residents at a W&R, maneuvering a mattress up and over into a bulky material roll-off container at grade or below grade (lifting over the safety railing) can be physically challenging. Once inside the container, the mattress and/or box springs can again create bridges which lead to sizeable air pockets, reducing the quantity hauled and reducing hauling efficiency. It should be noted that in 2009, a Sanitation Collector was injured assisting a resident in lifting a mattress into a roll-off and retired due to his disability.

So if mattresses are to be accepted at W&R for disposal, and hauling efficiencies are to be considered, the mattresses and box springs will have to be placed into containers in an organized manner, stacking them manually as they are received.

For Recycling

In order to qualify for recycling, mattresses and box springs cannot be wet, soiled or otherwise contaminated when accepted at a designated collection location. When received, the mattresses/box springs must be stored in a covered area to keep dry, pending loading or collection for recycling. The mattresses/box springs not suitable for recycling must be disposed of, so a mattress recycling operation must also maintain a disposal operation for those unsuitable for recycling, requiring twice the space/containerization.

The same handling challenges exist for recycling, requiring manual labor. In addition, mattresses for recycling must also be stacked by size, necessitating additional covered storage space. And someone must be available to inspect each mattress delivered to verify recycling potential.

Current Mattress/Box Spring Options for Residents

The Orange County Eubanks landfill facility the only county governmental recycling/disposal managed option for mattress/box springs. There is a \$10 fee per item. Residents personally unload their mattress/box spring and place them in the recycling shelter. The unsuitable units are hauled loaded into a roll-off container and hauled to the City of Durham Transfer Station for disposal. Recyclable units are collected by a vendor located in Greensboro for \$9 per unit, if collected from a single site and are separated by size.

The Towns of Carrboro, Chapel Hill, Hillsborough and Mebane offer a curbside collection (bulky item) program. Carrboro and Chapel Hill have a collection fee for the service. Hillsborough does not charge a fee but collects once a month according to an established schedule. Mebane does not charge a fee and collects on a per request basis. All collected mattresses and box springs are delivered to an out-of-county waste transfer station (Mebane to the Alamance County Landfill).

Some stores which sell mattresses/box springs offer removal and disposal of the old when new are purchased and delivered. Of those surveyed, the amount of the fee varies from no charge to a variable charge based on the speed of delivery (same day/next day/ standard delivery) and/or on the total amount of the purchase price. Fees ranged from \$45 to \$80, which includes the delivery of the new units and the removal of the old units. The county solid waste web site encourages residents to utilize this haul-away service offered by dealers.

Potential Alternate Means of Handling Mattresses/Box Springs

Acceptance of Mattresses/Box Springs for Disposal at District Waste and Recycling Centers

General Assumptions

- Neighborhood Centers are to have reduced services and reduced hours as compared to District Centers so the Bradshaw Quarry, High Rock Road and Ferguson Road centers are not being suggested as mattress collection stations.
- The Eubanks Road Center should not be considered an option until modernization construction is completed next spring; the temporary site will be unable to host this service.
- Increases in transportation costs and tip fee charges are difficult to estimate as to the volume of mattresses/box springs that may be received are unknown and varies from month to month.
- None of the Centers accept compensation for any service provided and are not recommended to begin handling money.

- Providing mattress recycling will also require a corresponding mattress disposal service for those mattresses not meeting recyclability criteria.
- It may not be practical to continue accepting mattresses at the existing Eubanks Road landfill facility for a fee while not charging at W&R's.
- Volume increases may result from Town residents if the fee is eliminated.
- Projecting quantities to potentially be delivered at a W&R or through a prepaid collection service are difficult since there is no historical data at the centers.

1. Abandon Fee and Eubanks Landfill Mattress Facility Location and Accept at District Waste & Recycling Centers (Walnut Grove Church Road and Eubanks Road)

a) Disposal Only

Issues:

- Loss of revenue for mattresses received and reduction of expenditures for paying vendor
- On grade roll-off containers will be required
- Will require additional expense for hauling and purchase of containers at two (2) centers
- Will require additional staff time to screen, stack and/or pick up off ground
- Increase in tipping fees for disposal as more mattresses are estimated to be received
- Provides northern portion of county a more proximate opportunity to dispose of mattresses
- Mattresses no longer accepted at Eubanks Road landfill facility

Estimated Annual Cost: **\$65,413**

Initial Start-up Cost: **\$13,294**

Two (2) new 30 yard roll-off containers, additional hauling costs for disposal; additional staff hours to haul and maintain container oversight and stacking; signage;

b) Recycling and Disposal

Issues:

- Additional space required – containers for both disposal and recycling
- More staff time to separate into two categories and stack for transportation
- More space for receiving mattresses/box springs, including three (3) new enclosed trailers and two (2) new 30 yard roll-off containers
- Increased costs for roll-off containers; cost of trailers; new staff to perform collections/loading/hauling; signage
- Additional workload for center operators in directing to correct container – recycling or disposal
- Some resident confusion at first as to which are District Centers and which centers do not accept mattresses
- Would significantly increase costs to recycling mattresses as they would have to be hauled back to the landfill for sortation and vendor collection
- Center Operators would have to closely monitor the placement of mattresses/box springs in the containers

- Somewhat greater risk of injury to a Center Operator assisting with the unloading from a vehicle (if needed) and placement into the container
- Mattresses would no longer be accepted at the Eubanks Road landfill facility

Estimated Annual Cost: **\$ 110,306** Initial Start-up Cost: **\$142,590**

Two (2) new 30 yard roll-off containers (\$9,294), three (3) new 7'X14' trailers (\$17,250), one (1) additional heavy duty pickup truck (\$28,071); additional hauling for disposal; signage; three (3) new staff including one (1) new .50 FTE Center Operator (\$26,903), one (1) new Recycling Materials Handler (\$45,444) and one (1) temporary Materials Handler employee (\$11,628) would be required to provide oversight at the Centers and to collect and haul recyclable mattresses in trailers; supplies, fuel and maintenance, uniforms, insurance, training, contribution to equipment replacement reserves. The Recycling Materials Handler would be assigned other duties when not managing mattresses, i.e. roll-cart delivery and repair.

2. Collect at Waste & Recycling Centers -Rotational Collection on Saturdays (Walnut Grove Church Road, Ferguson Road, High Rock Road and Eubanks Road) – Disposal Only

Issues:

- May be confusing to residents to recall rotation schedule
- Disposal option only; would be operationally challenging to rotate both recycling and disposal options so this option would not include mattress recycling
- Would expand mattress disposal service to most areas of county on a limited basis
- This option does not, but could continue Eubanks facility (landfill) mattress service for residents who wish to recycle (for a fee or not) for additional expense
- Saturday will not be convenient for a portion of residents
- Bradshaw Quarry W&R not capable of hosting this service
- Loss of fees currently collected at Eubanks facility (landfill) and elimination of recycling expenses

Estimated Annual Cost: **\$21,138** Initial Start-Up Costs: **\$13,294**

Two (2) new 30 yard roll-off containers (\$9,294); signage and advertising; additional hauling costs (fuel/maintenance); additional staff hours (possibly overtime) to haul and maintain container oversight and stacking (\$ 8,079)

3. Initiate Mattress/Box Spring Collection Service in Unincorporated Area – For a Prepaid Fee

Issues:

- Collect in unincorporated area for a prepaid fee; if no fee could be problematic to not include Towns, which currently have their own mattress (bulky waste) fee based collection programs
- Would collect for recycling and/or disposal; deliver mattresses back to Eubanks landfill facility for sortation into disposal and recyclable categories
- Difficult to predict how many mattresses/box springs would be collected in this manner; difficult to estimate revenue as well, but fees unlikely to fully fund service
- Could take orders/prepayment and then schedule collection within one week or less of payment
- Would have to establish parameters on where mattresses would be placed for collection, i.e. not entering homes or barns to collect, truck must be able to drive to within 50 feet of mattresses, etc.

- Continue to operate landfill mattress recycling service in addition to the collection service, continuing to charge \$10 fee per unit

Estimated Annual Cost: **\$ 94,171**

Initial Start-Up Cost: **\$112,177**

Cost Net of Revenue (\$20/unit fee): **Loss of \$76,171**

One box truck with lift gate (\$54,000); 1 new Recycling Materials Handler position (\$45,444) and one temporary employee (\$9,233); supplies (gloves, safety shoes, etc.) uniforms, training and equipment fuel and maintenance, contribution to equipment replacement reserves; insurance.

Fee per unit to cover 100% of costs

Fee per unit to cover 50% of costs

50 units/month = \$157

50 units/month = \$ 78

75 units/month = \$105

75 units/month = \$52

100 units/month = \$ 78

100 units/month = \$39

Likely reasonable maximum practicable fee (no rural mattress collection benchmark can be identified): \$20/unit (or \$40/set)