

MEMORANDUM

TO: Rob McNeil, Director of Public Works, Town of Nantucket
FROM: George Aronson, Principal, CRMC
RE: Cost of Landfill and Mainland Disposal of Composter Residuals
DATE 30 April 2019

This memorandum provides an updated comparison of the cost for disposal of residuals from the composter facility at the Town landfill and at suitable facilities on the mainland. CRMC performed the original analysis in 2016 when the Town was considering whether to expand the Town landfill by proceeding with the construction of Cell 3A. The construction has now been completed, and Cell 3A is now in service.

The analysis yields the following per-ton costs for disposal of composter residuals over a ten-year term starting in 2019:

- **\$83.53** per ton for disposal at the Town landfill.
- **\$188.16** per ton for transport to and disposal at a processing facility on the mainland, presuming that disposal costs for composter residuals are similar to disposal costs for construction and demolition (C&D) waste currently being shipped to the mainland by truck via the commercial ferry.

Per the above, landfill disposal of the residuals would save \$104.63 per ton compared to shipment to the mainland by trucks using the commercial ferry. Over the projected 10-year life of Cell 3A, with an inflation rate of two percent per year, the total cost to ship the residuals to the mainland would be \$6.18 million, which is \$3.60 million more than the \$2.580 million for construction and projected closure of the landfill. Note that the cost for placement of the residuals in the landfill is considered nominal and is not represented by a specific payment item in the Waste Services Agreement. Also, the life of the landfill is projected to extend through 2029, which is beyond the scheduled termination date of the Waste Services Agreement at the end of 2025. The total cost to ship composter residuals to the mainland through the end of 2025 is \$3.39 million, which exceeds the cost of landfill construction and closure by more than \$880,000. If the cost of landfill construction, which has already been paid, is considered a sunk cost, then the Town's incremental cost send composter residuals to the mainland would be an additional \$5.8 million through the life of the landfill – and an additional \$3.0 million through the end of 2025 – both well above the cost of cell closure.

This cost comparison depends on assumptions and factors that include the following:

- The landfill closure cost for Cell 3A, which is assumed to be \$300,000 in 2019 dollars. This estimate is based on the pro rata share for Cell 3A (21.7 percent based on 0.80 acres out of 3.69 total acres) of the overall cost for closure of Cells 2A, 2B and 3A (\$1.383 million, which is the amount secured by financial assurance).
- Term of use of the composter. As referenced above, the Waste Services Agreement is scheduled to terminate near the end of 2025 (a six-year term), while the landfill has sufficient capacity to accept residuals through 2029 (a 10-year term). The actual term of use provides the basis for amortizing the fixed costs of cell construction and closure. If the term is shorter than assumed, then the fixed costs would be amortized over a shorter term and the cost per ton would increase. On the other hand, the landfill capacity would have significant value for disposal of solid wastes other than composter residuals after the end of the Waste Services Agreement.
- Cost of measures taken to avoid or minimize fugitive odors from the composter residuals. A permanent operation for hauling residuals might need to add capability to shrink-wrap or otherwise process the baled materials prior to transport in order to avoid unacceptable odor impacts and liquid seepage from trucks waiting for or using the ferry. Costs for such operations are not included above.
- Tip fees for accepting the residuals. The analysis incorporates a tip fee in 2019 of \$87 per ton, which might be optimistic. The nearest disposal facility to the Hyannis ferry terminal, the Covanta SEMASS in Rochester, Mass., has indicated willingness in the past to accept baled residuals, provided that the bale ties are pre-cut and the tip fee is elevated to cover extra handling costs. Note that there is increased price pressure on waste disposal tip fees in southeastern Massachusetts as a result of closure of several large landfills (e.g., Fall River and Southbridge) and a subsequent imbalance between the demand for and supply of local waste disposal capacity. Large quantities of solid waste, especially C&D waste, are being exported from Massachusetts to landfills in upstate New York and Ohio. Tip fees at the outlet for managing C&D waste have increased from \$77 per ton in March 2017 to \$87 per ton in July 2018. Further increases are expected.
- Transportation efficiency. C&D waste is currently being hauled to a mainland disposal site at a cost of \$750 per load. Per-ton haul costs might be moderated to the extent that trailers carry more than the assumed 22 tons per load (based on actual experience with C&D waste).
- Alternatives to the commercial ferry. The prior analysis indicated that residuals might be shipped to the mainland by a commercial barge service; however, the residuals would need to be loaded into containers for shipment, because the material cannot be deck-loaded and the commercial barge services contacted were not capable of transporting fully-loaded trailers. The use of containers for composter residuals reduces transport efficiency and adds cost as compared to the use of trailers.

In this context, it is worth noting that the per-ton costs for moving C&D waste from the existing transfer station to the mainland, including haul costs, ferry fares and tipping fees, have increased at the equivalent of a seven percent annual compound growth rate over the past years as follows:

FY 2014	\$130.00 per ton
FY 2015	\$136.12 per ton
FY 2016	\$141.33 per ton
FY 2017	\$157.51 per ton
FY 2018	\$169.50 per ton
FY 2019	\$181.36 per ton

If the escalation rate slows down to two percent per year as rail-transfer capacity is added in southeastern New England and the supply and demand for disposal capacity come back into balance, the per-ton rate would exceed \$207 per ton by 2025.