SUMTER COUNTY SOLUTIONS: INNOVATIVE, INTEGRATED MSW COMPOSTING AND RECYCLING

By

Garry Breeden, Director
Sumter County Public Works Department
Bushnell, Florida

Mitch Kessler
TIA Solid Waste Management Consultants, Inc.
Tampa, Florida

FINDING AN INNOVATIVE SOLUTION

Faced with rising landfill costs and more demanding State-mandated recycling goals, communities in Florida and elsewhere are struggling to divert a larger portion of the municipal waste stream from landfills by recovering more of that waste stream through recycling and composting. Sumter County, Florida has developed a "state-of-the-art" system to do what communities everywhere want to do: recover more of the waste stream. This high-tech system takes full advantage of integrated solid waste management technology to consolidate recycling and composting activities at one location. The system, which evolved gradually as County officials worked to develop a solid waste management system to best serve the needs of the Sumter County community, represents a model for communities everywhere.

In 1975, Sumter County permitted a landfill to dispose of the municipal solid waste (MSW) generated by the residents of this small rural county in central Florida. As the County's landfill neared capacity and the State of Florida passed laws requiring more extensive recovery of material for recycling, Sumter County began to explore alternative solid waste disposal methods.

Energized by the 1988 Florida Solid Waste Management Act, the County evaluated existing options for treating solid waste and selected MSW composting supplemented with a drop-off recycling program. This combination of recycling and composting, one of the first of its kind in the United States, was selected for its ability to maximize the recovery of material and for its compatibility with the County's rural demographics. Sumter County began processing and composting MSW at the Sumter County Solid Waste Facility in 1988.

In 1995, in an effort to improve materials recovery and composting operations, the County appointed a solid waste steering committee to develop the most effective and efficient integrated recycling-composting system possible. The result of the this committee's efforts was development of a MSW materials recovery facility (MRF) and a compost digester system specifically designed to achieve the County's solid waste management objectives.

The County's state-of-the-art MRF and compost digester system offers maximum up-front recovery of materials for recycling, enables the County to produce top quality compost, and has the capacity to process 100 tons per day of municipal solid waste. It is the only MSW processing and composting facility of its kind, not only in Florida, but in the United States. The facility's innovative design has already gained widespread attention in the industry both because its design combines recycling and composting processes and because of its projected high materials recovery rates.

COMBINING RECYCLING AND COMPOSTING

During initial up-front processing, recyclable materials are both mechanically and manually removed from the waste stream and recovered for recycling. The MRF is equipped with the latest processing and recycling technologies, including an automated debagging system, a residue disc screen, and an eddy current separator. Recovered materials are baled on-site and marketed by the County. Materials remaining after processing in the recycling system are used for compost feedstock.

The materials remaining in the waste stream after MRF processing are introduced into an aerobic digester for composting. The digester is an impressive metal cylinder approximately 13 feet in diameter and 185 feet long. This giant rotating barrel provides a favorable environment for the natural biological breakdown of organic waste into compost. The digester's controlled environment produces a higher quality compost in less time than under natural conditions. The County's digester system is equipped with an air filter and drainage system to eliminate odors and leachate.

The County's compost digester system also offers an effective alternative for managing animal wastes and biosolids. The digester system is designed to handle 50 tons of MSW compost feedstock per day, and for every 50 tons of MSW feedstock, 25 tons of nitrogen source materials are added to support the composting process. Thus, the County processes 25 tons per day of biosolids or other nitrogen sources in the production of high quality compost.

PRODUCING HIGH QUALITY COMPOST

After processing in the digester for approximately three days, material is discharged and screened. Material leaving the digester is partially composted but needs additional "curing" to become high quality finished compost the County can market. This curing process is most efficient when moisture and oxygen levels can be controlled. To protect compost from excessive moisture and drying, screened material is deposited in windrows in the County's compost finishing building, a pre-engineered metal building where turning machines periodically aerate the material to complete the composting process and produce high-quality Class A compost.

After curing in windrows for approximately thirty days, compost is processed through a final screening to ensure consistency of texture and particle size. Finished compost produced by the County's system can be marketed for a variety of agricultural and horticultural applications.

High quality compost serves as a valuable soil amendment to improve moisture retention, conserve waster, and increase resistance to pests and diseases.

SERVING AS A MODEL

Sumter County's integrated system, which incorporates lessons learned from the County's pioneering experience in solid waste management and composting, represents a unique approach to solid waste management planning. Rather than rely on any one technology or company—none of which have successfully implemented all the necessary design, siting, technology, and financial components—the Sumter system uses the best elements available from several suppliers of solid waste and composting equipment and systems. Customizing facility design in response to local operating experience, rather than accepting the usual turnkey package approach, is exactly what is necessary to make mixed waste composting succeed.

Successful operation of the Sumter system will also demonstrate that mixed waste composting is a technology that, if properly designed, can substantially enhance solid waste management and produce a valuable soil amendment. Moreover, mixed waste composting may be the key element in keeping recycling and resource recovery options viable for small rural counties, which increasingly must either haul their waste to distant landfills or overcome the difficult challenges of siting and operating their own landfills.

Because Sumter County's integrated recycling and composting system offers an innovative solution to common solid waste management challenges, other communities are looking to Sumter County for leadership in this rapidly developing technology. The Sumter system has been the focus of articles in leading trade publications, and the facility was a featured tour site for the NRC conference in Orlando in September 1997. Sumter County's solution serves as an important model for other communities seeking cost effective systems to maximize materials recovery and achieve sound solid waste management.