



# COVANTA ENERGY ENERGY FROM WASTE ASH MONOFILS

## LOCATION

Carver, MA & Haverhill, MA

## OWNER

Covanta Energy

## ENGINEER

Civil and Environmental Consultants

## CONTRACTOR

New England Liner Systems, Inc.

## SIZE

4 Acres & 12 Acres

## DATE COMPLETED

2015 & 2016

## PROJECT DESCRIPTION

Covanta puts an end to constant slope repair with a stable and cost-effective closure technology.

With more than 60 acres of closed landfill space to manage, Steve Melloni, Covanta Energy's Regional Landfill Manager, has a lot on his plate. Most of his closed waste to energy ash landfills are traditional Subtitle D vegetation caps. His site supervisors oversee the monthly maintenance of mowing and the occasional reseeding.

"Most of our maintenance is typical with grass," said Melloni. "However, when inclement weather strikes much like it has in the last two years, we are on standby to manage any repercussions. That could include costly repairs such as rebuilding slopes, replacing soil and re-establishing vegetation."



View of the top deck at Covanta Energy Monofil.



## COVANTA ENERGY

In 2014, Melloni and his team began evaluating an alternative closure system called ClosureTurf® for their 12-acre Carver-Marion-Wareham Landfill in Carver, MA. This particular site overlooks Buzzards Bay making it heavily exposed to weather elements such as wind, rain and snow. With these extreme conditions, they anticipated the slopes would weaken, become unstable, and require constant rebuilding. The ClosureTurf system offered a solution that eliminated that risk, Melloni said. "Once we did our research and evaluated other sites, we focused on the long-term aspects of the system and found that ClosureTurf required very little maintenance, if any, after installation. That was a slam dunk for us."

ClosureTurf meets and exceeds the requirements set forth by the EPA in Subtitle D. It is a three-component system that eliminates the need for soil all together.

"While ClosureTurf has many advantages, we really liked that it provided around 12,000 cy of extra capacity for ash," explained Melloni. "Because the two feet of soil is not required, we were able to use that space to our advantage."

With the internal decision solidified, the next step proved to be the most challenging. Covanta submitted their application to the regional Massachusetts Department of Environmental Protection (DEP) office. Because this would



HydroBinder®'s cementitious infill in the benches and down chutes at this site provided the cover with the perfect weight to eliminate any bubbling effects that might have been caused by the high water velocity and pressure.

be the first use of ClosureTurf in the state, the agency wanted some time to do its homework and fully evaluate each component of the system. With time constraints to complete the project looming, the DEP agreed to allow ClosureTurf to be used on the 4-acre top deck but required the use of a traditional vegetation system on the side slopes.

According to Melloni, site conditions proved to be somewhat challenging for installation. "With 30 mph winds, the main concern was getting the Agru Super GripNet® geomembrane to lay down nice and tight in order to avoid wrinkles and maximize performance. The crew did an amazing job and lots of care was given to ensure the membrane went in correctly."

"Another thing we experienced on site was when we began installing the engineered synthetic turf, gas began to build-up and we started to see pockets form," he said. "We eliminated this by installing a specialized ClosureTurf gas vent on every acre. Once the relief valves were in place, the turf laid down perfectly. We were able to incorporate this seamlessly with our traditional gas collection system."

Underneath the ClosureTurf system, gas is generated and rises to the surface where a vacuum created by the differential pressures is vented through the surficial gas collection foot. This proved to be an efficient method of gas collection while reducing the amount of condensate that needed to be managed.

As far as satisfaction levels to date, Melloni said, "The site has performed exceptionally well. The last two summers have been some of our hottest and we have experienced some torrential down pours. The ClosureTurf system has held up wonderfully with no maintenance to date."

In fact, the Covanta team was so impressed with the CMW project, they decided to use ClosureTurf on a separate site in Haverhill, MA. "This project was actually approved by a different agency that governs our Northeast region, so we had different people evaluating ClosureTurf," explained Melloni. "Once the product was presented and vetted, it



Installation of the Agru Super GripNet®.



Aerial shot of the landfill mid closure.

was approved to use on all twelve acres of our Haverhill site. Again, we were able to increase ash capacity and consider the cost savings with maintenance.”

“I love to show our ClosureTurf sites off. It’s hard to imagine a product like this working so well until you see it in action. Our sites have performed beautifully, and I constantly remind everyone of the cost benefit this has brought to the table.”  
- Steve Melloni, Covanta Regional Landfill Manager

The Haverhill site design was a little different than the previous site, explained Melloni. “We had big diversion berms along the side slopes on this site. In fact, these are the first things you see when you drive up to the site. We chose the olive green ClosureTurf product and my first inclination was that you would see this fake green colored turf right off the bat. However, the grass and sand infill have blended together so well that you get a very natural-looking, grass-like appearance. I am very pleased with just how real this site looks.”

The back sides of the diversion berms were another area where ClosureTurf defied design. “The back of the berm transitions from 2:1 slopes to 3:1,” said Melloni. “I was concerned that the sand infill would trap and build, and ultimately look out of place. Surprisingly, even with all of the rain, we’ve had no wash overs and the sand has stayed in place very well.”

As with any landfill site, managing water flow effectively can prove to be challenging and very important to the functionality of the design. Created specifically for down chutes, bench drains and perimeter channels, HydroBinder® cementitious infill provides superior hydraulic performance capable of handling large flows on steep gradients. “Our action swales on this site turned out to be some of the best we’ve ever done,” said Melloni. “With the water velocity and pressure we get, I was concerned the turf would balloon up and not sit tight on the ground, however the HydroBinder weighted it down perfectly. There is no bubbling effect, and the water flows down smoothly and cleanly.”

Because ClosureTurf requires no soil or fertilizing, stormwater runoff is clean of debris. The sand infill provides a natural filter for water running off of the slopes which dramatically improves water quality, making it an effective BMP for Clean Water Act requirements.

Covanta plans to continue using ClosureTurf in additional site designs. Melloni and his team are extremely happy with the product.