



FOR IMMEDIATE RELEASE
DATE: June 20, 2017

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Crow Wing County Landfill. It's anything but a dump

BRAINERD — When you hear the word 'landfill' what comes to mind? Do you think of piles of garbage or a mile-high heap of waste? Many of us think that. The Crow Wing County landfill, however, is benefiting from smart technology that might make you think twice about your local landfill. A mountain of trash may be a slight exaggeration, but up until the late 1960s, landfills in America had few regulations or systems in place to break down trash. This is why you might find decades-old papers and other items in near perfect condition.

"Education is key." Doug Morris, the County's Solid Waste Coordinator, says it best in the simplest of terms. Morris explains that there is always a smarter, more beneficial, and efficient way to do something. "We're led to believe that the trash business is a dirty game with seemingly no positive outcomes in sight; the water is bound to become contaminated and the air is filling with pollutants as we speak." Morris knows firsthand that's it's just the opposite. "Many can't believe what a positive difference we're making at the Landfill. There are great new innovations to help reduce pollutants and save on the pocketbook."

21st century waste management run like a business: zero tax dollars

Crow Wing County's landfill program is built to be self-sustaining, with adequate revenue through tipping fees to cover operating costs and future capital projects. This is how the County is able to operate such an advanced facility without relying on tax dollars. Years ago landfills did not have the ability to contain or convert the toxic by-products given off by decomposing waste such as methane gas which is one of the most potent greenhouse gases contributing to global warming.

By decreasing greenhouse gas emissions to the atmosphere, Crow Wing County is not only helping the environment, but is working towards offsetting the cost of the technology put in place at the facility. This technology includes a series of wells and pipes that collect and deliver landfill gas to a flare for destruction and to the Landfill's maintenance shop for energy recovery. In 2015, the County earned \$38,300 in carbon credits by reducing carbon emissions at the landfill by almost 11,000 metric tons.

According to the U.S. Environmental Protection Agency, that's like taking 2,326 cars off the road for an entire year. In the last nine years, over 94,000 metric tons of carbon offset credits have been earned, worth about \$365,000. That's similar to removing about 20,100 vehicles off of our roads. Using landfill gas for building heat avoids the cost of purchasing natural gas during the winter months. Crow Wing County has had a history of being ahead of the curve. In 1991 the federal government mandated that all municipal solid waste landfills be lined to prevent hazardous chemicals from leaking into the groundwater. **That fall, over 25 years ago, Crow Wing County opened the first standalone lined landfill in the state of Minnesota.**

The science behind Crow Wing County's purpose built landfill

Since then, Crow Wing has made it a priority to stay on top of technology in the waste industry. Marvin Stroschein, the Landfill Operator of 34 years, proudly stated, "Crow Wing County uses science to let nature do its process. Other folks use manpower. Science works better." While the conventional landfill compacts trash as tightly as possible to take up less space, Crow Wing County does the opposite. Each layer of trash is only driven over three times so oxygen and moisture can work its way through the loosely packed fill and decompose the waste more rapidly. By exposing trash to the elements, space is used far more efficiently and the landfill uses up less space over time.

Engineers that come out to take regular measurements at the site were even led to believe Crow Wing hadn't been dumping any trash in their landfill as the levels hadn't varied between surveys, all due

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to the way the trash is handled. Mountains of garbage are a thing of the past in Crow Wing County as with the current system in place, each layer of garbage can be broken down completely.

A significant risk from landfills is leachate. Think of it like the “coffee” that is generated as rainfall percolates through the waste and is collected on the liner below. The water accelerates the decaying process of the trash but, in doing so, it takes with it all the soluble elements of whatever is decomposing. Metals such as arsenic, zinc and nickel as well as organics like ammonia used in fertilizers all end up in the water coming out of the landfill. As the leachate reaches the bottom, it goes through a layer of sand filtering solids before entering the piping systems at the bottom. That leads to yet another unique feature at Crow Wing County’s Landfill: the water treatment ponds.

Rather than trucking out the leachate to an offsite wastewater treatment plant facility in another county (like most other landfills do at costs exceeding roughly \$500,000 every year). Crow Wing instead treats everything that comes out of their own landfill in-house. The water goes through an aeration and settling process which takes out contaminants until it is nearly drinking water quality. About 8 million gallons of water comes out of the Landfill per year and is processed in the ponds. About half of the collected leachate is then put to use by recirculating it back into the landfill through pipes that furthers the breakdown of the waste. The advancements at Crow Wing County’s Landfill allow trash to break down at a rate five times faster than in traditional landfills. This expedited process decreases the amount of time the noxious gasses have to generate and reduces pollutant concentrations in the leachate, which in turn significantly reduces the chance of extremely hazardous outcomes such as contaminated groundwater or even spontaneous combustion in the landfill. Each time the water goes through the County’s Landfill, the leachate quality improves and requires less treatment in the ponds. Leachate collected from the Landfill meets most drinking water standards.

Beyond this filtration process, the landfill also has a double containment system in place which is comprised of two feet of clay and a layer of 60-mil. high density polyethylene plastic with an advanced leak detection system beneath the fill. Eventually, once the water has made its final circulation, it will be treated one last time before being sprayed onto the fields near the landfill. Throughout the summer, these fields are mowed and the grass is gathered into hay which is composted on top of the Landfills and then used as temporary cover on Landfill side slopes and as a topsoil amendment on site projects. **Crow Wing County has essentially turned its Landfill into a treatment vessel, something relatively unheard of in the rest of the country.**

2020 Vision: Taking the landfill to the next level

Currently, Crow Wing County is busy making further innovations to allow them year-round water treatment. Today, the Landfill is only able to run their water treatment ponds in the warmer months, but through a reverse filter they could keep up with treatment all year with no additional taxes.

The County is always looking to improve the residential recycling rates. Although Minnesota requires all non-metropolitan counties to recycle 35% of total solid waste by weight, Crow Wing County has an impressive rate at 51.6%. However, as remarkable as that percentage is, only 10% of the county’s recycling comes from residents. Crow Wing County is working to develop ways to reach its residents and help emphasize the importance of recycling.

The employees at the Crow Wing County Landfill recognize there is always room for improvement and are doing their utmost to remain at the forefront of further advancements. They are searching for those innovative opportunities and the work is never done. The landfill is at the cutting edge of technology, and that’s where it should be. Crow Wing County, with just 62,000 residents, two hours north of the metropolitan area in Minnesota, finds itself ahead of the entire state and even the majority of the country in terms of how waste is disposed, and they don’t intend to stop there

So now, when you think of the word ‘landfill’ what comes to mind?

What can you bring to the Crow Wing County landfill?

The following items are accepted for free:

- Yard and Garden Pesticides
- Used oil
- Rechargeable batteries
- Lawn and garden material
- Used paint and aerosols.
- Household cleaners
- Lead acid car and marine batteries
- Mercury devices like old thermometers

The following items are accepted for a small fee:

- Large appliances
- Tires
- Mattresses
- Electronics
- Old furniture
- Antifreeze

Did you know?

Did you know you can take used paint home for FREE? In fact, nearly 1/3 of all paint dropped off at the Household Hazardous Waste Facility is taken by Crow Wing County residents in this free exchange program. Call 218-824-1290 to schedule an appointment.

The Crow Wing County Landfill is located at 15728 State Highway 210 just east of Brainerd. For more information, visit www.crowwing.us and search "household hazardous waste" or call the Solid Waste Office at (218) 824-1290.

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