City of Pflugerville

Legislation Text

File #: 2021-0570, **Version:** 1

Discussion regarding the future of composting at the Central Wastewater Treatment Plant.

This item has been included on the agenda to allow for discussion.

The Central Wastewater Treatment Plant has been running a windrow composting operation since the late 1990s. This process involves taking our dewatered solids from the Central wastewater treatment process and mixing it with wood chips in a specific ratio to make a compostable product. This mixture is then formed into a pile called a windrow which must then be turned multiple times throughout a month to “cook” any microorganisms that may be present in the solids. While this seems to be a simple process, the turning of the windrows can be complicated. Turning the piles must both aerate the piles to keep oxygen flowing into the pile to keep the microorganisms active that are breaking down the waste products of the sludge/solids and also keep the moisture content stable within the windrow. The moisture levels must stay within specified guidelines in order to not create a pile that is too dry and overheat the compost or too wet and not allow the pile to heat up enough to “cook” everything. Once the windrow has gone through roughly one month of turning and curing, the compost must be tested to have an E.Coli level below 1,000 MPN/gram in order for it to be considered a Class A Compost that we can distribute to residents. In the span of three weekends of the Recycle Center being open in May, we totaled 36 customer pick ups of compost. This is typical traffic for our compost.

This process is currently done with a small loader that is used to turn the piles and with a trommel screen that is used to separate the compost material from the wood chips that we use. The loader isn’t intended to be used to turn compost windrows and will produce uneven results in our various test piles where we sometimes will have too much moisture or too little that is due to being unable to effectively turn the entire pile. In other cities that run a windrow composting operation, they use a windrow turner which will turn all piles uniformly and ensure that we meet both our oxygen and moisture goals to make a good compost product. A windrow turner usually costs around $500,000 (2020 Cost) and after speaking with other cities and operators that use these, they typically last about 15 years but could last for 20 years depending on usage. The current trommel screen has roughly another year of use before it reaches the end of its useful life. These machines will typically last 15 years and the replacement cost for a trommel screen is roughly $450,000 (2020 Cost).

Previously, before the plant was expanded further, the solids from the process were allowed to sit in a drying bed which would allow the solids moisture content to be minimized without having to turn the piles nearly as much since the drying beds would allow the sun to both reduce moisture and “cook” microorganisms much quicker. As the wastewater treatment plant has expanded, these drying beds were repurposed to be used for more sludge staging areas for the sludge haulers to pickup and haul away as we needed to dewater more solids throughout the entire day. The current space we have allocated for composting operation is roughly 40,000 ft^2 for both composting and sludge hauling for our 5.3 MGD plant (and future 8.5 MGD plant after Phase II expansion is complete and ultimate 10 MGD capacity). A City that performs windrow composting that has a plant similarly sized to the

Central Wastewater Treatment Plant is the City of Denton's Pecan Creek Wastewater Treatment Facility. The treatment plant is permitted for 15 MGD and they run a full composting operation (no sludge hauling) that is commercialized as "Dyno Dirt." In order to produce the compost product, they use both a windrow turner and a trommel screen to create a consistent product. The space that they require to run this operation is roughly 800,000 ft^2. This also requires 3 FTEs to both turn and screen the piles and to commercialize the product to get it into the hands of distributors to sell. With only 40,000 ft^2 of space currently available, the proper space to process compost is not available at the Central Wastewater Treatment Plant site.

For the City to do windrow composting properly, we would need to consider purchasing both a windrow turner and a replacement trommel screen. This would cost us roughly $950,000. If we were to convert 10% of our solids that we currently haul off to compost to give to residents, we would save about $40,000/year on hauling costs which would take us about 24 years before we broke even on the windrow turner and trommel screen (assuming no cost to maintain the equipment). If we were to factor in a 1% annual cost for equipment maintenance on both the windrow turner and the trommel screen, our maintenance cost for both machines would $230,825 from 2021-2040 and would make our break-even point 30 years from date of purchase. At that point in time, we would have had to replace them both for an additional $1,383,970 in 2040 (this assumes a 2% CPI adjustment per year from 2021-2040 and a 20-year life expectancy).

The current design for the second phase of the Central Wastewater Treatment Plant Expansion is underway which has a specific line item on evaluating the future of compost and whether it is feasible to continue windrow operation or whether it would make economic sense to produce compost with another alternative technology that can work on a smaller footprint. Staff is requesting City Council input on where they would like to see the future of compost within the City of Pflugerville and how they would like to proceed moving forward with the composting operation.

Prior City Council Action
N/A

Deadline for City Council Action
No action to be taken.

Funding Expected: Revenue __ Expenditure __ N/A _X_
Budgeted Item: Yes __ No __ N/A _X_
Amount: _____
1295 Form Required? Yes __ No _X_
Legal Review Required: N/A _X_ Required __ Date Completed: _____

Recommended Action
This item is for discussion. No action will be taken.