

Leaf Program Study – Additional Questions and Answers

The Department of Public Works has compiled questions raised at the April 19th Town Council conference session and subsequent questions that have been raised. DOPW has provided answers using the best information available. There will need to be further study in some cases if more detailed information and analysis is desired.

The current leaf program is performed by the same staff that repair roads, plows snow, maintain storm sewers, assists with sanitation functions, sweep streets, and perform many other public works functions. In essence we have an integrated and complicated operation because of the many services we provide. We have adapted our operations over the years and will continue to adapt as service needs change and new means and methods become available. As a result, we are unable to predict the full impact that leaf program modifications would have on other levels of service.

For our current program, residents rake leaves to the edge of the street. The Town uses 3 separate crews, each consisting of four 4 employees (driver and 3 laborers) and a leaf loader trailing behind a tandem truck equipped with a leaf box to vacuum up the leaves. Other employees and equipment such as a supervisor, loader operator and loader are also used.

The leaves are collected until the end of December and stored at the Beulah Road site. We ground about 1/3 of what we collected in January this year and delivered the mulch to residents and one out of Town business throughout January, February, and March. The remaining 2/3 were delivered to Loudoun Composting. In the past we paid no dump fee. This year we paid \$9 ton which is less costly than other available options that are \$35 and \$42 per ton.

The industry measures leaves collected in cubic yards. We collected 7,427 cubic yards in the 2020/2021 season. One cubic yard is a cube that is 3 by 3 by 3. To put 7,427 cubic yards and the current leaf program in perspective:

- It took 364 tandem truck loads to collect.
- 7,427 cubic yards would fill the new gym at the community center 25' deep in leaves.
- We delivered 484 small truckloads of ground leaves.
- We delivered 155 tandem loads of unground leaves to Loudoun Composting.

Follow-up questions and answers:

Can we bring our leaves to Fairfax and deliver mulch back to our residents in Vienna?

We can bring the leaves collected directly to Fairfax. Picking up leaf mulch from Fairfax for delivery to town residents is currently not an option but is under discussion. If we were to bring our leaves to Fairfax it would be like either a short-haul or long-haul option. If we can use the

West Ox Road facility, the distance is 18 miles round trip, and the current disposal cost is \$42 per ton. Loudoun Composting is 33 miles round trip, and the disposal cost is \$9 per ton.

At \$42 per ton this would be a total of \$61,740 for the 1,470 tons of leaves collected during the 2020/2021 season. Disposal costs at Loudoun for \$9 per ton were \$13,230 for the 2020/2021 season. The disposal cost would increase by \$48,510 in this case.

Round trip mileage would be 15 miles less than going to Loudoun Composting for leaf disposal. The estimated time for delivering each load to Fairfax would be the same as Loudoun because of long wait times at the Fairfax location. For the 366 loads of leaves we picked up in the 2020/2021 season this would represent 5,490 less miles driven but the fuel use would be similar because of lower speed roads and idle time associated with going to Fairfax. Tandem maintenance costs are also based on engine hours so there are no apparent savings in hauling to Fairfax.

If we get commitment for provision of leaf mulch from Fairfax. It would cost an additional \$37,709 in labor and equipment to pick up and deliver mulch from the Fairfax County West Ox Road facility (see estimate below). The purchasing cost of mulch would need to be factored in. Plus, a reduced capacity to deliver to residents because of the total round trip time of 2 hours per load vs. less than 1 hour per load would need further study.

	Using Beulah (6 miles round trip and 45 minutes per load)	Using Fairfax (18 miles round trip and 2 hours per load)
Number of actual deliveries to residents in 2020/2021	484	484
Total mileage	2,904	8,712
Total hours	363	968
fuel cost at \$7.33 per hour	\$2,661	\$7,095
Labor cost at \$55 per hour	\$19,965	\$53,240
subtotal	\$22,626	\$60,335 (\$37,709 additional)

The total additional cost would be:

Disposal costs at \$42 ton vs \$9 ton	\$48,510
Picking up mulch at West Ox	\$37,709
Mulch cost	unknown
Total additional cost	\$86,219 plus unknown

Can the town send the leaves out of town to be mulched then returned to the residents?

Yes. We would need to find a location, evaluate options, and obtain needed funding. One of the options is Fairfax that was looked at above. The length of the trip to the dump and pick up

location will need to be determined and a cost developed. Further study is needed for a complete analysis.

When is a decision needed by DPW to determine plan for this coming season?

If we continue the program like last year's program, we need to know by the start of leaf season which is October 1, 2021.

If we go with the elimination of leaf grinding and mulch delivery with the continued use of Beulah (short haul) we would need also need to know by the beginning of leaf season which is October 1, 2021.

If we go with the long haul which is the elimination of the use of Beulah and mulch delivery, we will need enough time to budget for and procure equipment. It is already too late for this season. If next FY's budget includes funding for long haul option, we could start implementation with the 2023/2024 leaf season with purchased trucks. We could start with the 2022/2023 season if we were able to rent trucks for the first year.

Is the rental machine quieter than the old tub grinder?

We cannot determine this without a sound study like the one done in February 2018. In addition, rental machines could vary from year to year making comparison difficult.

In the absence of an updated sound study and for comparative purposes, our existing tub grinder is nonoperational and in the queue for auctioning and has 1,446 hours on the engine. Both our retired and 2020/2021 rental tub grinders have 525 Horsepower engines. Town staff that was onsite during the operations report that the rental unit was quieter than the town owned tub grinder. The rental machine had insulated panels surrounding the engine and a rebuilt engine with 400 hours on it. The rental tub grinder had exhaust ports on the side of the machine. During operation, these exhaust ports were pointed towards Beulah Road and away from the adjacent properties.



The rental tub grinder ground leaves for 11 hours during the 2020/2021 season. The town tub grinder ground for 80 hours during the 2018/2019 season which was the last one it operated for. Future run time of a rental tub grinder will most likely be 20 – 40 hours depending on the equipment used by the contractor.

The Town owned tub grinder has 2 exhaust ports above the machine which project noise in a different manner than the rental unit:



Can the manufacturer provide any data on the noise of the machine?

This is the information provided by the manufacturer for the unit we rented in 2021/2021:

SOUND LEVELS

Sound pressure and sound power levels were determined according to test procedures specified in ISO 6393 and ISO 6394.

Equivalent Continuous A-Weighted Sound Pressure at Operator's Ear:

At main operator station $L_{Aeq} = 102 \text{ dB(A)}$
In loader cab $L_{Aeq} = 77 \text{ dB(A)}$

Sound Power Level $L_{WA} = 118 \text{ dB(A)}$



10-4

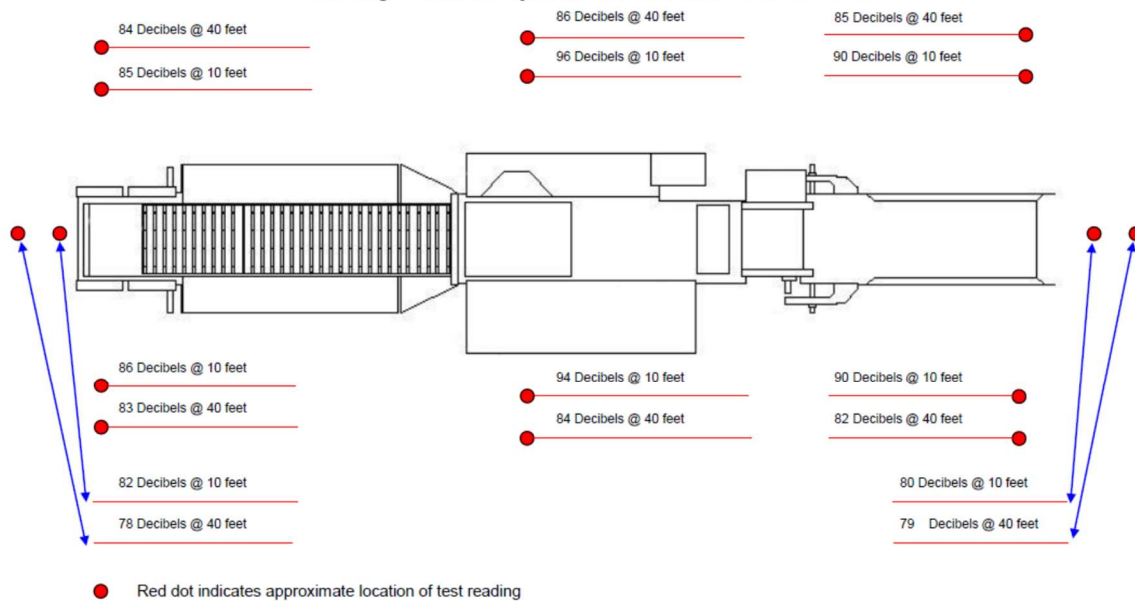
TG525 Tub Grinder

A potential rental unit for this upcoming leaf season is an EC-366 which is reportedly a quieter unit. Here are some actual decibel readings taken on it:

No Load

MP-2 Wheel Mount 275 HP - Decibel Readings CAT C 7.1 Tier 4

All Readings Were Taken 1 Meter From The Ground
Readings Taken By James Orbeck On 10/6/17



Rotochopper has taken reasonable measures to ensure the accuracy of these readings. However, a number of factors including product mix, building location, weather conditions and equipment maintenance may effect their accuracy. Rotochopper can not guarantee these numbers. Actual results may vary.

Interested in alternate pick-up methods such as broom and chute.

There are many alternate operations that could be investigated. Staff looked at the broom and chute method and several others. All require additional equipment and have their own challenges such as maneuvering around parked cars and down narrow streets. The method we use now has evolved over many years of operation. Further study and planning are needed to determine costs and pros/cons of an alternate method.

Would like the CSC to opine on environmental aspects.

This is under development. Town staff has started an analysis of mileage, fuel usage and greenhouse gas emissions for some options to aid in the analysis:

- *Actual 2020/2021 program*
- *Estimated short haul to Loudoun Composting using 2020/2021 volumes.*
- *Estimated long haul to Loudoun Composting using 2020/2021 volumes.*
- *Estimated short haul to West Ox Road using 2020/2021 volumes.*
- *Estimated long haul to West OX Road using 2020/2021 volumes.*

Would like to look at marginal costs for long-haul.

Pending completion of mileage from analysis of:

- *Actual 2020/2021 program*
- *Estimated short haul to Loudoun Composting using 2020/2021 volumes.*
- *Estimated long haul to Loudoun Composting using 2020/2021 volumes.*
- *Estimated short haul to West Ox Road using 2020/2021 volumes.*
- *Estimated long haul to West OX Road using 2020/2021 volumes.*

Think that 10 years is too long for tandem truck life.

The Town currently owns four tandem vehicles that are shown in the FYE 2022 Vehicle Replacement Program.

<i>Vehicle number</i>	<i>description</i>	<i>useful life</i>	<i>current age</i>	<i>planned replacement year</i>
<i>85- Sanitation</i>	<i>Tandem</i>	<i>12</i>	<i>4</i>	<i>2031</i>
<i>38 – Street Maintenance</i>	<i>Tandem</i>	<i>15</i>	<i>13</i>	<i>2025</i>
<i>65 – Street Maintenance</i>	<i>Tandem</i>	<i>15</i>	<i>13</i>	<i>2023</i>
<i>83 – Street Maintenance</i>	<i>Tandem</i>	<i>15</i>	<i>15</i>	<i>2022</i>

The useful life is set by staff based on use of the equipment. Tandem truck 85 is a heavily used truck that collects waste and is used more often than the other tandems so a useful life of only 12 was used. The useful life of vehicles is in the Vehicle Replacement Program (VRP) approved by Council on an annual basis.

If we were to charge for mulch, how much should we charge?

The leaf study looked at 6 other jurisdictions programs. One, Arlington County charges for delivery

Leaf mulch – 2.5 cubic yards: \$50

Leaf mulch – 5 cubic yards: \$75

It should be noted that Arlington County does not offer delivery onto private property and offers the following delivery location options:

Curbside: You must have a minimum of 30 feet of open space away from parked cars and low-hanging wires for mulch delivery. If your delivery location is within a no parking zone, mulch will not be delivered. Any mulch left on the roadway or sidewalk must be removed by the resident within 24 hours. Mulch left longer than 24 hours may be removed by the County with no refund.

Driveway: County vehicles can only deliver within 6 feet to 8 feet of the driveway apron.

Town staff obtained examples of local business that deliver mulch.

Remington Mulch delivers leaf mulch for a \$75 per load delivery fee plus \$35 per CY of mulch with a 10 CY minimum. That would be \$425 per load.

Merrifield Garden Center delivers wood mulch for a \$60 delivery fee and \$30 per CY up to 12 CY per truck load. A full truck load would be \$420.

The trucks the Town currently uses for in Town delivery hold 3CY and mulch is delivered onto the residents' property.

Cost of electric vehicle to consider environmental.

Electric powered heavy duty public works equipment is not available currently. For instance, Ford has just announced the availability of a Ford F-150 Lightning Pro for commercial fleets with a starting MSRP of \$39,974. The larger equipment used for the leaf collection program is not available yet.

Would like to see total trucking mileage for alternates.

This is under development. Town staff has started an analysis of mileage, fuel usage and greenhouse gas emissions for some options to aid in the analysis:

- *Actual 2020/2021 program*
- *Estimated short haul to Loudoun Composting using 2020/2021 volumes.*
- *Estimated long haul to Loudoun Composting using 2020/2021 volumes.*
- *Estimated short haul to West Ox Road using 2020/2021 volumes.*
- *Estimated long haul to West OX Road using 2020/2021 volumes.*

Can the town build something more around the grinder to cut down on noise for residents?

Yes, the Town built one on 2004 custom for our tub grinder. The enclosure is in poor condition and needs to be disposed of. If we built a replacement, it is not clear that it would reduce the noise given that rental tub grinders have different exhaust configurations. For comparative purposes, in 2004 the enclosure took 224 labor hours and \$ 2,732.94 in materials to fabricate.