



Water and Waste Department • Service des eaux et des déchets

Summit Landfill Soil Fabrication Pilot Project

Windrow Turner Test

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Prepared For:

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Summit Soil Fabrication Pilot Project: Windrow Turner Test

BRRMF December 20th, 2018

Introduction

Windrows in Year One Phase Two (Y1P2) of the Summit Soil Fabrication Pilot Project were built to accommodate a pull behind windrow turner. Windrows from Y1P2 and Year Two Phase One (Y2P1) will be turned and spread in the spring of 2019. In order to test whether a pull behind compost turner may be effective, a test windrow was created at the Brady Road Resource Management Facility (BRRMF), biosolids composting facility. The test took place on Thursday, December 20th, 2018.

The leaf and yard waste compost turner model number CT820 from Vermeer was used to mix the test windrow. This turner works similarly to the pull behind model: the turner slowly moves over top of the material, mixing the windrow with large steel blades. The turner was tested at BRRMF due to the impracticality of transporting the turner to Summit Landfill. Additionally, a fresh windrow represented the non-frozen conditions of spring mixing and spreading operations planned at Summit.

Environmental Controls

The test windrow and all feedstocks were contained on the biosolids pad with existing environmental controls. Surface water on the asphalt portion of the pad drains to the leachate tank, which gets pumped out regularly and the liquid is brought to NEWPCC to be treated. The gravel pad drains to the retention pond. Odour was monitored during the test using biosolids composting protocols. No biosolids were composted during this test.

After the windrow was formed and mixed, the area was thoroughly cleaned, including all equipment and vehicles. All biosolids were scraped from the asphalt pad and added to the windrow.

Feedstocks

Screened sweepings were brought from Summit Landfill on December 13th and 14th, 2018. Approximately 150 m³ of street sweepings was deposited on the gravel portion of the pad west of the current bunkers.

Biosolids were diverted from being buried in the landfill to the biosolids pad on the test day. No biosolids were stockpiled on site.

Biosolids were dumped on the asphalt portion of the pad in front of the furthest north bunker. Wood chips were placed to the north of the biosolids to create a pad and “backer” to grab the biosolids.



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The windrow was created to the west of the asphalt pad on the gravel base. A woodchip base of approximately 10 cm was placed down on the gravel, reducing the potential for biosolids seepage onto the gravel. This area drains to the controlled retention pond.

Woodchips were used from the BRRMF wood grinding operation.

Equipment

One large loader with a 5 yard bucket was used to create the windrows the same size as at Summit (4.5 m wide x 2m high). The leaf and yard waste compost turner model number CT820 from Vermeer was used to mix this test windrow.

Windrow creation

Once all the feedstocks were on site, the windrow was created using the same technique as Summit Soil Fabrication Y1P2: two scoops of woodchips were placed directly beside each other and biosolids were placed between these two piles and three scoops of sweepings were placed on top. For an effective test of the compost turner the windrow was 20-25 meters long. This required 50 tonnes of biosolids, or two loads.

Results

No odour concerns were noted during the windrow turner test.

The windrow turner was able to move through the 25m windrow in five minutes. After one pass of the turner, the street sweepings and biosolids appeared thoroughly mixed together with woodchips more prevalent on either side of the windrow. A second pass of the windrow turner appeared to effectively mix together all the material. The turner operator reported no concerns moving through the material. The end of the windrow which had sat the longest, and therefore had partially frozen was noticeable to the operator on the first pass. However, there was no difference noticed in the second pass of the turner.

The test results support moving forward with testing a pull behind windrow turner at Summit Landfill.

Fabricated Soil

The soil was successfully mixed by the compost turner and will be stockpiled on the compost pad until it can be spread on a closed portion of the landfill close to the 2017 fabricated soil plots. The fabricated soil will be applied only over areas that are underlain by previously completed waste disposal cells and in such a manner that it is placed and spread so as to form a generally homogeneous cover layer.