Water and Waste Department • Service des eaux et des déchets

Summit Landfill Soil Fabrication Pilot Project

Year Two Phase One Interim Report

May 2019

Prepared For:

Manitoba Sustainable Development
Climate Change and Environmental Protection Division
Environmental Approvals Branch
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Introduction

On May 7, 2018 the City of Winnipeg, Solid Waste Services (SWS) received approval from Manitoba Sustainable Development (MSD) to commence the three year Summit Soil Fabrication pilot project, 2018-2020, examining the viability of fabricating soil with biosolids to complete the cap system at Summit Landfill. This interim report covers the activities of Year Two Phase One (Y2P1). The main goals for Y2P1 were to test doubling the timeframe of biosolids managed to two months and test operations in cold weather conditions.

The main findings from Y2P1 are:

- Soil fabrication can successfully manage two months' worth of biosolids; and
- Soil fabrication is possible in winter conditions (0 to -39C); and
- Street sweepings may become frozen if not placed in windrows, requiring an excavator to break up the material for mixing.

Activities since Y1P2

Wood and Wood chips

Wood chipping operations continued at Summit Landfill. All wood chips from this operation were directed to the soil fabrication pilot project. City crews and contractors also dumped wood chips at Summit in designated areas. Wood chip volumes on site were reviewed prior to the start of Y1P2 and it was determined there was enough to meet the needs of the first month of operations at approximately 8,000m3. As woodchips continued to be brought to site throughout the operational phase, and chipping operations started with warmer weather in March, no additional woodchips were required to be hauled from Brady Road Resource Management Facility.

Spreading of Y1P1 Windrows

A manure spreader was used to spread Y1P1 windrows on the designated plot starting October 1, 2018. Soft and wet conditions slowed down operations in October. Below freezing temperatures made spreading the material easier in November. Some of the Y1P1 soil had rocks and debris from the cap after being mixed with the excavator in Y1P1. As this material could not be spread with the manure spreader, the remaining soil was pushed using a D6 bulldozer to the edge of the Y1P1 plot.

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Environmental Monitoring

Wood chip stockpiles and fabricated soil windrow temperatures continue to be taken on an as needed basis. Due to winter weather conditions, most windrows were frozen. No odour was detected from the windrows.

Operations

The biosolids receiving operation phase started on February 4th, 2019 and was completed March 29th, 2019. Over the course of these 39 working days 8389.15 tonnes of biosolids were received at Summit Landfill and mixed into an initial soil blend. All biosolids produced during the operational phase were accepted in the soil fabrication process. Site layout from the operation can be found in Appendix A and B.

The soil blend of 1(biosolids):2(wood chips):3(sweepings) was continued in this phase. Windrows were constructed in the 'taco' style and sized to meet requirements for a pull-behind windrow turner. At this ratio, Y2P1 operations produced, in theory 50,335 m^3 of top soil. However, due to the nature of the material, the mixed volume is lower. With mixing, spreading and settlement, it is anticipated that the total volume also reduces over time. Volumes are tracked with regular drone scans to gain more information on end soil volumes based on the initial material blends

Operations were possible in winter conditions, which included 38.4 cm of snow in February. Travel surfaces were solid. Main impacts to operations included:

- Frozen street sweepings, which were broken up with an excavator;
- Longer equipment times due to warming up times and cold related break downs; and
- Additional snow clearing on site.

Next Steps

Windrows, including Y1P2 and Y2P1, will be left in place until spring of 2019, when they will be mixed with a windrow turner, and then spread with a dozer or other equipment. The windrows will be turned after they are completely thawed to ensure thorough mixing and to prevent equipment damage. The spread soil will be seeded by Naturalist Services Branch.

Soil samples will be taken during the spreading phase in spring. Environmental monitoring, including surface water sampling and vegetation monitoring will proceed over the spring and summer months.

Environmental Results

Odour

Biosolids odour was detected in the biosolids dumping area while biosolids were being dumped. Odours were observed to be reduced after mixing biosolids with woodchips and street sweepings. No odours were detected offsite during the biosolids receiving operations.

Soil

Y1P1, Y1P2 and Y2P1 soil will be sampled after spreading and before seeding in spring of 2019.

Surface Water

The project is located within the boundaries of the Summit Road Landfill leachate and surface water collection and containment system. Surface water will be sampled after the material is spread. The first samples will be taken in spring of 2019, and additionally through the season dependent on precipitation events and presence of surface water.

Vectors

No vectors were observed during the operational phase.

Dust, noise, nuisance

There were no dust, noise or nuisance concerns during operations.

Site Security and Safety

Safe Work Procedures were reviewed every week with staff and followed at Summit. Job Safety Planning Forms were completed daily, where all local hazards were identified and addressed. All personnel onsite were required to wear appropriate PPE, this included safety glasses and High Visibility rain jackets when appropriate to mitigate any weather hazards. No safety or emergency incidents occurred during Y1P2.

Year Two Phase Two (Y2P2)

Y2P2 will start the day after the last day of biosolids hauling for the land application program in 2019. It is anticipated this will be early to mid-October. Y2P2 will proceed for two months from that date. Spreading and seeding will take place in spring of 2020.

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Regulatory Approval

Approval to proceed with the Summit Soil Fabrication Pilot Project under the Exemption Clause (6) of the *Classes of Development Regulation* was received on May 7, 2018. Y2P1 proceeded according to the Summit Soil Fabrication Pilot Year Two Phase One (Y2P1) Project Plan.

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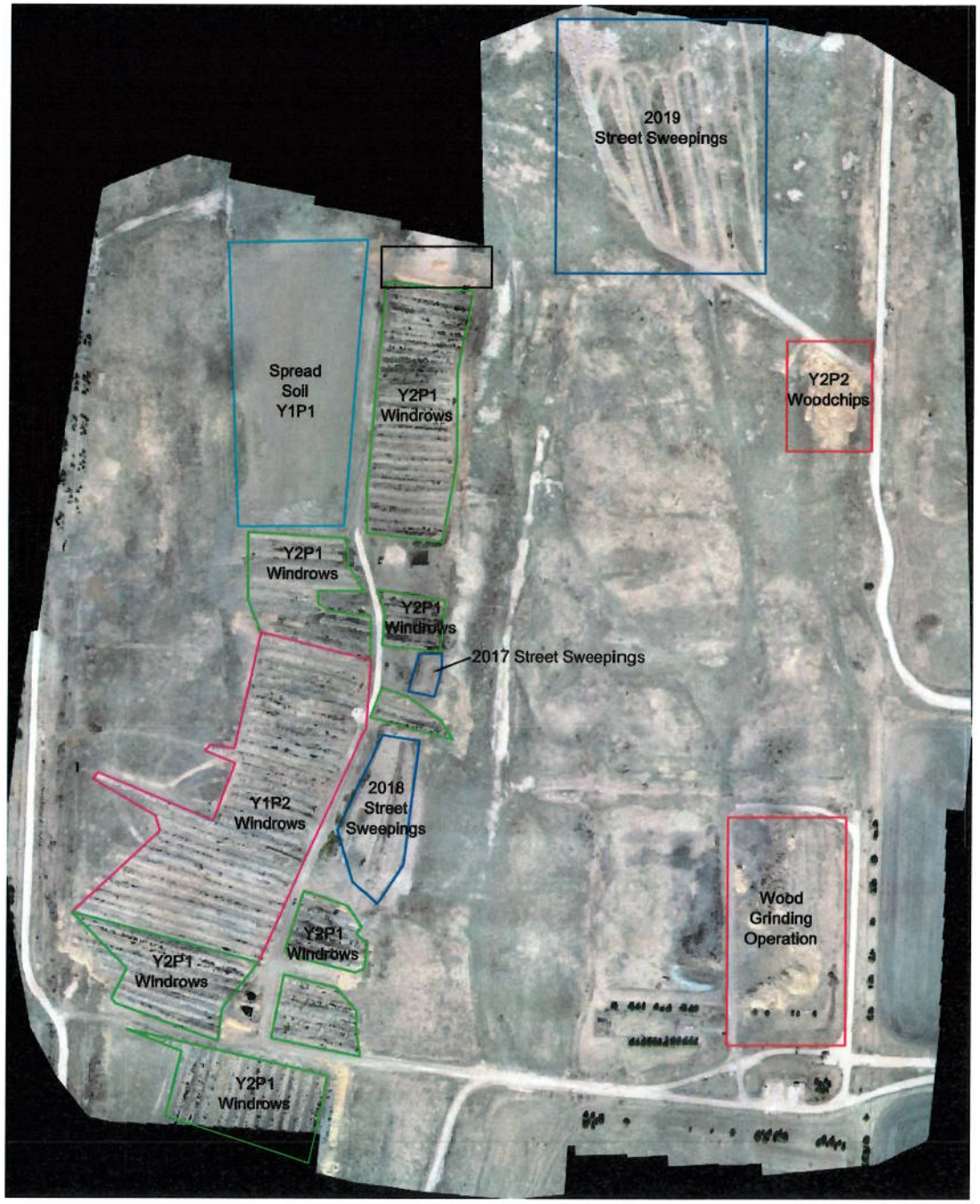
Summit Landfill
Soil Fabrication Area - Y2P2
March 11th, 2019

Flight: May 8th, 2019
Summit Landfill
Soil Fabrication Project



Y2P1: End of Mixing Flight