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March 29, 2022

TM-9991 Code #09-LF-009

James Capotosto, Director Environmental Approvals Branch Manitoba Environment, Climate, and Parks 1007 Century Street Winnipeg, Manitoba R3H 0W4

## Re: Canadian Kraft Paper Landspreading Pilot Study Project - Continuation

Dear Mr. Capotosto:

Since October 2017 Canadian Kraft Paper Industries (CKP), with the approval of Manitoba Environment, Climate and Parks (MECP), has undertaken a Landspreading Pilot Study Project which involves removing biosolids from the effluent treatment system and applying it to industrial lands on CKP's millsite. On April 20, 2018, CKP submitted a modified approach to the Landspreading Pilot Study Project. Approval from MECP for the modified approach was received on June 12, 2018, which stated that the initial Pilot Study would be valid until April 30, 2022. CKP has worked under this approval until 2021. To continue landspreading in 2022, CKP is requesting an extension of the pilot study. This will allow for the removal of primary biosolids from the effluent treatment system in order to maintain the system's treatment efficiency. The focus of the project moving forward is to continue the analysis of biosolids being used as a growth media on industrial lands. CKP is exploring other beneficial uses of the biosolids which include mine tailings remediation/cover and as a soil amendment on agricultural lands. Continuing the project will also divert the biosolids from our onsite landfill, extending the landfill's life and aligning with MECP directive to reduce landfill waste. Table 1 summarizes the volume and location of the landspreading to date on CKP property.

Year	Site	# Hectares	Rate (BDT/Ha)	Bone Dry Tons of Material (BDT)	Source of Biosolids
2017-					
2018	2A	4.72	327.38	1545.24	North and South Settling Basin
2018	2B	0.72	644.15	463.79	South Settling Basin
2018-					North and South Settling Basin;
2021	Capped Landfill 1	12.04	845.26	10,176.95	Aerated Lagoon
2020	Capped Landfill 2	0.95	396.81	357.97	South Settling Basin
2021	North of Sawmill	1.41	933.33	1315.92	North Settling Basin

Table 1: 2017-2021 Landspreading Volume and Location

	South of Water				
2021	Treatment	2.13	933.33	1315.92	North Settling Basin
Total		21.97	690.75	15,175.79	

As per the June 2018 NoA, the biosolids landspread on Sites 2A and 2B in 2018, will no longer be tested annually (testing for 3 years after the application is required). Also, in 2018 portions of the Capped Landfill 1 that were landspread on will no longer be tested. All other areas will be tested in fall 2022. Portions of the primary and secondary biosolids spread on Capped Landfill 1 have been seeded, the remaining portions that received biosolids in 2020 and 2021 will be seeded in spring 2022 as these areas were too soft to access last fall. North of the Sawmill, South of Water Treatment, and Capped Landfill 2 will also be seeded spring of 2022. Results of past years seeding have been impressive with sites showing large amounts of vegetation growth, see photos from 2021 in Appendix A.

For 2022, primary biosolids from the North Settling Basin will be dredged in order to maintain the health of the effluent treatment system. Based on previous years, it is estimated that roughly 3000 BDT will be removed from the settling basin. The plan is to spread this material onsite if approved. In 2021 CKP also received approval from MECP to conduct a trial that involved mixing lime mud from the emergency spill pond onsite with biosolids and landspreading this material. Due to the approval being received late last year, CKP plans to carry out this trial in 2022. A portion of the primary biosolids dredged will be combined with the lime mud, more details on the trial are provided below.

## **Biosolids Application in 2022:**

On August 16, 2021, MECP approved the spreading of an additional layer of biosolids on previously landspread sites as long as phosphorus concentrations in the soil were less than 60 ppm. CKP plans to landspread an additional layer of biosolids on the remaining sites that were approved in the August 16, 2021, correspondence and other locations where the phosphorus concentration is below the limits. This includes site 2A and portions of the Capped Landfill 1 (CLF1). Proposed 2022 sites are listed in Table 2 and all landspreading sites are shown in Figure 1.

Source of	Site	#Hectares	Rate	Bone Dry Tonnes
Biosolids				of Material
Lagoon, NSB,	2a (Zone 1)	2.18	691.4	1507.25
SSB			Tonne/Ha or	
			1' in depth	
Lagoon, NSB,	2a (Zone 3)	1.36	691.4	940.30
SSB			Tonne/Ha or	
			1' in depth	
Lagoon, NSB,	CLF1(Zone 2) <sup>[1]</sup>	1.16	691.4	802.02
SSB			Tonne/Ha or	
			1' in depth	
Lagoon, NSB,	Previous landspread	TBA	691.4	TBA
SSB	sites that contain		Tonne/Ha or	
	less than 60ppm		1' in depth	
Total		4.7		3250

Table 2: Proposed Application Rates and Locations (hectares estimated from Google Earth)

[1] CLF1 (Zone 2) was partially landspread in 2022. The CLF1 Zone 2 has 1.16 hectares that can be utilized in 2022

Figure 1: CKP Millsite with Labelled Landspreading Sites



Table 3 lists the available phosphorus from 15 and 30 cm depths (composite samples) on landspreading sites at CKP. Note that the results from the control areas and site 2D, are all background soil values (no biosolids were applied on these sites). The remaining results are from sites with biosolids applied over the soils, as such the samples would contain a combination of both native soils and biosolids. There are a number of sites that include Site 2A/2B, North of Sawmill, South of Water Treatment, and portions of CLF1, where available phosphorus levels are currently below 60 ppm in the soil after biosolids application. On these locations, CKP is requesting to spread an additional 1' layer of sludge. With 3-5 years of erosion and plant growth on these sites, biosolid depths have reduced to as little as 3-4" in some locations and in others have become homogenous with the underlying soils. This can be seen in the site photos in Appendix A. Prior to applying an additional layer of biosolids, these sites will be harrowed to create a uniform base layer.

Site	Depth (cm)	Year	Source of Biosolids/Material	2017	2018	2019	2020	2021
Site 2A – Zone 1	0-15	2017	North Basin	1.8	35.3	25.1	25.0	-
Site 2A – Zone 2	0-15	2018	South Basin	1.8	118	58.5	36.8	18.4
Site 2A – Zone 3	0-15	2018	South Basin/Yard Waste	1.8	45.8	18.5	41.8	32.4
Site 2A Control	0-15	-	-	-	<1.0	<1.0	<1.0	<2.0
Site 2B	0-15	2018	South Basin	1.8	58.1	42.9	21.5	21.8
Site 2B Control	0-30	-	-	-	1.3	2.3	1.5	1.9
CLF1 – Zone1	0-30	2018	South Basin	3.6	55.7	69.7	83.1	85.6
CLF1 – Zone 2	0-30	2019/2021	North basin	3.6	-	49.4	72.0	103
CLF1 – Zone 3	0-30	2018/2019	Aerated Lagoon	3.6	113	244	137	166
CLF1 – Zone 4	0-30	2020	South basin	-	-	-	56.2	39.2
CLF2	0-30	2020	South Basin/ Aerated Lagoon	1.6	-	-	49.7	68.1
Site 2D	0-15	-	-	-	-	-	<1.0	-
North of Sawmill	0-15	2021	North Basin	-	-	2.8	-	27.0
South of Water Treatment	0-15	2021	North Basin	1.6	-	-	-	30.9

Table 3: Available P for all Landspreading Sites from 2017-2021

It should also be noted that during the fall 2020 conference call with MECP, CKP requested additional information from MECP regarding the maximum allowable phosphorus levels for industrial soils. During the call MECP had mentioned a 60 ppm limit but this applied to agricultural soils. CKP has yet to receive a response on the allowable limit for industrial soils.

## **Biosolids and Lime Mud Trial:**

In an October 28, 2021, correspondence, MECP approved CKP's August 5, 2020, NoA trial that involved landspreading lime mud from the emergency spill pond mixed with primary biosolids from the settling basin. Due to the timing of the approval, CKP was unable to include the spreading of lime mud in the 2021 program. As such CKP will carry out the trial in 2022. As the approval process to spread a mixture of biosolids and lime mud took longer than anticipated, previously identified sites for the trial have since been utilized for landspreading biosolids. CKP is proposing to carry out the trial at the locations listed in Table 3 and shown in Figure 2. Sites for each trial mixture will be finalized spring of 2022 after the snow melt in order to adhere to the slope and set back requirements outlined in the June 12, 2018, NoA. CKP is proposing 2 biosolids/lime mud mixtures during the 2022 trial. The ratio of the sludge/lime mud will be 50/50 and 75/25 and will be spread to a depth of 1'.

Site	Hectares
CLF2	3.24
2D	1.3
Totals	4.21

Table 3: Proposed Trial Locations (hectares estimated using Google Earth)

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Each site listed in Tables 2 and 3 that is slated to receive biosolids or a biosolids/lime mud mixture will be bermed prior to application in order to capture any potential run-off. A formal monitoring program is in place to address and mitigate any non-compliances that may occur. Specifically, weekly inspections of the landspread areas will take place. This includes ensuring the integrity of the berms and removal of any standing water that has the potential to breach the berm using a vacuum truck. If a significant amount of water accumulates within any of the bermed areas, it will also be removed by a vacuum truck and taken to the effluent treatment system for treatment.

The planning for the 2022 dredging and landspreading pilot study project is tentatively scheduled to begin in mid-May. CKP is requesting a response regarding the continuation of the Pilot Study Project by April 29, 2022, to ensure that there is no delay in the work planned for spring 2022.

Sincerely,



Attach.

cc: Siobhan Burland Ross, Environmental Approvals Branch, Winnipeg Robert Boswick, Environmental Approvals Branch, Winnipeg Cristal Huculak, Environmental Compliance and Enforcement, The Pas Leigh Johnston, Environmental Superintendent Tamsin Patience, CKP Technical Manager EC-1

## Appendix A



Photograph 1: Site 2A Zone 2 June 7, 2021



Photograph 2: Site 2B June 21, 2021



Photograph 3: CLF1 Zone 3 June 22, 2021



Photograph 4: Site 2A Zone 3 July 7, 2021



Photograph 5: Site 2B July 21, 2021



Photograph 6: Site 2A Zone 3 July 27, 2021



Photograph 7: Site 2A Zone 1 Aug 9, 2021



Photograph 8: CLF1 Zone 2 August 18, 2021



Photograph 9: CLF1 Zone 3 September 8, 2021



Photograph 10: Site 2A Zone 2 September 14, 2021



Photograph 11: 2B October 14, 2021



Photograph 12: Site 2A Zone 3 October 14, 2021