ΑΞϹΟΜ

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Date October 25, 2017

Ms. Tracey Braun Director Department of Sustainable Development Environmental Approvals Branch Government of Manitoba 160-123 Main Street Winnipeg MB R3C 1A5

Our Reference: 60551693

Dear Ms. Braun:

Pilot Study – Industrial Sludge Land Application Project: Update

In response to our recent telephone conversation with Asit Dey regarding the approved Pilot Study for the application of industrial sludge from the Canadian Kraft Paper Industries Ltd. facility located in The Pas, AECOM is pleased to provide you with the following additional information.

Please find attached an updated Notice of Alteration (NOA) Form for your records. After discussions with Asit Dey, the application fee of \$500 has been waived.

1. Identification of Lands

Please find attached an updated figure providing the legal land description (section/township/range) for the facility site. Biosolids from the north settling basin will be applied in the areas identified as Site-2A to Site-2D. In our previous letter reponse, dated October 23, 2017, we provided the available groundwater well logs for Site-2 which were located on 26-56-26 WPM. The land application of biosolids will be located on the following pieces of land all owned by Canadian Kraft Paper Industries Ltd. (CKPI):

- · 26-56-26 WPM
- · 27-56-26 WPM

Please note; a review of the available groundwater well record database (GWDrill, 2012) was conducted to determine the soil conditions at Site-2A. There are no logs in the database for 27-56-26W.

2. Soil Sampling at Site-2

As indicated in the Section 3.1 (Pilot Study Components) of the Pilot Study report, a composite soil sample was collected from the potential application sites for laboratory analytical testing for chemical and physical properties. As soil conditions were observed to be consistent at all four locations (Site-2A to Site-2D), it was determined that one composite sample for Site-2 composed of soil collected from Site-2A to Site-2D would be sufficient.



3. Incoroporation of Biosolid Material

The Minor Alteration Approval, Item No. 9a states the following;

"The Licencee shall: a) apply the biosolids originating from the north settling basin of the Development to the identified agricultural land by broadcasting from a spreader followed by incorporation into the soil using a disc or cultivator within two days of spreading such that the depth at which the biosolids are introduced into the soil is a minimum of 15 centimetres below the soil surface and there is no surface expression";

Recent discussions with CKPI and a local farmer have indicated that, the four locations at Site-2 contain a large amount of rock, which will damage a disc or cultivator. In addition, Site-2 is not considered agricultural land; it is mainly composed of disturbed soils consisting of a mixture of clay, silt, and gravel, mixed with wood chip waste. As such, it was recommended to continue to spread the biosolid material in 2017 via front-end loader and in the following spring of 2018, seed the areas with a native grass mixture, and then use a harrow to incorporate the biololids and seed. This will assist in establishing baseline vegetation which in turn will mitigate potential dust issues at the site.

The four locations at Site-2 are all relatively flat and in areas where potential run-off may be a concern, the contractor will construct a small berms as required to prevent any potential surface/melt water flow off-site during spring melt. CKPI staff will also monitor these areas where biosolids have been applied during the spring melt to monitor surface runoff. In the event there is potential for surface/melt water flow off-site, CKPI will construct/upgrade the berms as needed. Seeding will occur as soon as the soil thaws in the spring and the climate allows for seeding. If excess run-off becomes an issue, further mitigation measures will be considered in coordination with Manitoba Sustainable Development that may include characterizing the surface/melt water to develop discharge options.

4. Groundwater

As indicated in Section 4.1.4.1. (Extent of Groundwater Use) of the Pilot Study report, 58 groundwater wells are located within 2 km of Site-1 and Site-2. According to the groundwater well records, 48 of these wells were registered as test wells, eight were registered as production wells, and two were registered as observation wells. Of the production wells, four were identified as domestic use and the other four as industrial use. The production wells located at Site-2 are currently being used to supply water for the sinks and toilets in the Garage, Maintenance Shop and Sawmill located at the CKPI site, and one well (previously used to supply cooling water in the mill) was taken out of service and capped several years ago. Also, some of these identified test wells are part of CKPI on-site monitoring wells due to a historic bunker C oil contamination of the groundwater.

Groundwater is not used for human consumption. The source of potable water for the CPKI facility is the Saskatchewan River, which is treated prior to use in a water treatment plant located on the property. Bottled water is also supplied as drinking water throughout the facility.

An additional review was conducted of the available groundwater wells (GWDrill, 2012) for Site-2A (27-56-26W). There are no available groundwater well records for 27-56-26W therefore the groundwater wells available for 26-56-26W are assumed to be representative for Site-2A. After reviewing these groundwater well records, Well PID # 62772 and 62792 are anticipated to be the closest to 27-56-26W. According to these records, gravel till ranged in depth from surface to 6.1 m below grade which overlies clay that ranges in thickness from 1.5 m to 6 m immediately above the limestone bedrock. As groundwater well records from the area indicate that well screens are set within the limestone bedrock, there appears to be a sufficient thickness of fine grained clay above the limestone bedrock to act as a barrier for any infiltration of surface water. Please find attached a copy of the groundwater wells for 26-56-26W.



5. Additional Notes

The Minor Alteration Approval, Item No. 9a states the following;

The Licencee shall notify the assigned Environment Officer not less than ten days prior to the commencement of removal, transportation and land incorporation or land injection of biosolids. The notification shall include the intended starting date of the activities and the name of the contractor responsible for the activities.

Approval for the Pilot Study program was granted on October 23, 2017. Due to the urgency of removing the biosolids from the north settling basin and continued communication with Environment Branch, the removal of biosolids began on October 24, 2017, prior to the 10 day notice to the local Environment Officer. CKPI contacted via email the Regional Supervisor Cristal Huculak for the Northwest Region along with the Environment Officer, Dylan Funk about the commencement of biosolid removal on October 24, 2017.

The Minor Alteration Approval, Item No. 10 states the following:

The Licencee shall apply biosolids such that the amounts of residual nitrate-nitrogen in the 0-24 inch soil depth and Olsen-P phosphorus in the 0-6 inch soil depth do not exceed the limits of the most limiting Nutrient Management Zone, regardless of size, set forth in the Nutrient Management Regulation under The Water Protection Act or any future amendment thereof.

We would like the confirm that the collection of additional soil samples will take place prior to seeding and harrowing in spring 2018 as indicated in Section 3.5 (Schedule) of the Pilot Study report when the soil thaws prior to seeding. Additional soil samples will be collected in fall 2018, following the growing season.

Thank you for your prompt attention on this Project, and please do not hesitate to contact me at 204-928-7475 if you have any questions or require any additional information.

Sincerely,

AECOM Canada Ltd.

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Kristiina Cusitar, BA, CET, EP(SAR) Environmental Assessor Environment, Western Canada



NOA Form



Client File No. :	Environment Act Licence No.: 1339 RR
Legal name of the Licencee: Canadian Kraft Paper Industries Ltd.	
Name of the development: Pilot Study -	Industrial Sludge Land Application Project
Category and Type of development per Classes of Development Regulation:	
Waste Treatment and Storage	Biosolids application
Licencee Contact Person: Jayne Sheppard, P. Eng. Mailing address of the Licencee: PO Box 3634 City: The Pas Province: MB Postal Code: R9A 1L4 Phone Number: (204) 623-8587 Eax: Email: jayne sharperd@stei.com	
	Eman, jayne.sneppard@ckpi.com
Jayne Sheppard, P.Eng.	
Phone: (204) 623-8587	Mailing address: PO Box 3634
Fax:	The Pas, MB R9A 1L4
Email address: jayne.sheppard@ckpi.com	
Short Description of Alteration (max 90 characters):	
Pilot Study Follow Up - land application of industrial sludge	
Alteration fee attached: Yes: No: 🗸	
If No, please explain: Waived by Manitoba Sustainable Development	
Date: 2017-10-25	re: Ayn Shypen
Printed	name: Jayne Sheppard
A complete Notice of Alteration (NoA) consists of the following components: Cover letter Notice of Alteration Form 4 hard copies and 1 electronic copy the NOA detailed report (see "Informa Bulletin - Alteration to Developments with Environment Act Licences") \$500 Application fee, if applicable pavable to the Minister of Finance)	Submit the complete NOA to: Director Environmental Approvals Branch Manitoba Sustainable Development Suite 160, 123 Main Street Winnipeg, Manitoba R3C 1A5 For more information: Phone: (204) 945-8321 (Cheque, Fax: (204) 945-5229 http://www.gov mb ca/sd/eal



Figure

Figure: 01

AECOM

Locations of Industrial Sludge Land Application - Facility



Last saved by: SMITHC2 (2017-10-23) Last Plotted: 2013-04-22 Project Management Initials: Designer: Checked: Approved: Filename: P:\60551693\900-CAD GIS\920-929 (GIS-GRAPHICS)\FIGURES - SLUDGE APPLICATION\G001 60551693 01V2 MILLSITES.MXD

ANSI A 215.9mm x 279.4mm



Groundwater Wells, GWDrill (2012)

GWDrill Data, Province of Manitoba, 2012.

LOCATION: 26-56-26W

Well_PID: 62772 Owner: MANFOR Driller: WATER'S DRILLING CO. LTD. Well Name: #11 Well Use: TEST WELL Water Use: UTMX: 354441 UTMY: 5971075 Accuracy XY: UNKNOWN UTMZ: Accuracy Z: Date Completed: 1988 Nov 18

WELL LOG

 From
 To
 Log

 (ft.)
 (ft.)

 0
 1.0
 GRAVEL

 1.0
 5.0
 GREY TILL

 5.0
 26.0
 BROWN CLAY BOULDERS

 26.0
 30.0
 LIMESTONE

 30.0
 33.0
 FRACTURE, GREEN SHALE

 33.0
 50.0
 LIMESTONE

 50.0
 57.0
 FRACTURED ZONE, SHALE

 57.0
 88.9
 LIMESTONE; SMALL FRACTURES

 88.9
 98.9
 FRACTURES, SAND

 98.9
 99.9
 LIMESTONE

WELL CONSTRUCTION

From To CasingInside Outside SlotTypeMaterial(ft.)(ft.) TypeDia.(in) Dia.(in) Size(in)0027.0 casing5.00INSERTBLACK IRON27.099.9 open hole5.00

Top of Casing: 1.5 ft. below ground

No pump test data for this well.

REMARKS

E. SIDE OFFICE AT PULP MILL

Well PID: 62792 Owner: MANFOR Driller: WATER'S DRILLING CO. LTD. Well Name: #17 Well Use: **TEST WELL** Water Use: UTMX: 354441 UTMY: 5971075 Accuracy XY: UNKNOWN UTMZ: Accuracy Z: Date Completed: 1988 Nov 20

LOCATION: 26-56-26W

WELL LOG

From To Log (ft.) (ft.) 0 5.0 GREY TILL 5.0 20.0 GREY TILL BOULDERS 20.0 24.0 BROWN CLAY 24.0 31.0 LIMESTONE 31.0 32.0 FRACTURE GREEN SHALE BLACK WATER TRACE OIL 32.0 42.0 SOFT ROCK, LIMESTONE; BROWN 42.0 65.0 LIMESTONE; BROWN 65.0 86.9 LIMESTONE; LIGHT BROWN, SMALL FRACTURES 86.9 94.9 LARGE FRACTURES, MORE WATER 94.9 119.9 LIMESTONE; SMALL FRACTURES, LIGHT BROWN

WELL CONSTRUCTION

From To CasingInside Outside SlotTypeMaterial(ft.) (ft.) TypeDia.(in) Dia.(in) Size(in)024.0 casing5.00INSERTBLACK IRON24.0119.9 open hole5.00

Top of Casing: 1.0 ft. below ground

No pump test data for this well.

REMARKS

N.W. CORNER OF PULP MILL PROPERTY NEAR HYDRANT

Well PID: 62768 Owner: MANFOR Driller: WATER'S DRILLING CO. LTD. Well Name: #4 Well Use: **TEST WELL** Water Use: UTMX: 354441 UTMY: 5971075 Accuracy XY: UNKNOWN UTMZ: Accuracy Z: Date Completed: 1988 Nov 15

LOCATION: 26-56-26W

WELL LOG

From To Log (ft.) (ft.) 0 4.0 GREY TILL 4.0 22.0 BROWN CLAY BOULDERS 22.0 25.0 LIMESTONE 25.0 25.5 FRACTURE 25.5 65.0 LIMESTONE, SMALL FRACTURES 65.0 67.0 FRACTURE 67.0 80.9 LIMESTONE; BROWN 80.9 81.9 FRACTURE 81.9 88.9 LIMESTONE; LIGHT BROWN 88.9 96.9 FRACTURE; LARGE, BLACK WATER, BROKEN ROCK, TRACE OIL 96.9 109.9 LIMESTONE LIGHT BROWN 102-105 FEET FRACTURE WELL CONSTRUCTION

From To Casing Inside Outside Slot Type Material (ft.) (ft.) Type Dia.(in) Dia.(in) Size(in) 0 22.0 casing 5.00 INSERT BLACK IRON 22.0 109.9 open hole 5.00

Top of Casing: 1.0 ft. below ground

No pump test data for this well.

REMARKS

E. SIDE PULP MILL

Well PID: 62769 Owner: MANFOR Driller: WATER'S DRILLING CO. LTD. Well Name: #7 Well Use: **TEST WELL** Water Use: UTMX: 354441 UTMY: 5971075 Accuracy XY: UNKNOWN UTMZ: Accuracy Z: Date Completed: 1988 Nov 17

LOCATION: 26-56-26W

WELL LOG

From To Log (ft.) (ft.) 0 1.0 ICE 1.0 3.0 CLAY TILL 3.0 14.0 BROWN CLAY BOULDERS 14.0 23.0 LIMESTONE BROWN 23.0 24.5 FRACTURE, DARK WATER 24.5 41.0 LIMESTONE 41.0 43.0 FRACTURE, DARK SHALE 43.0 50.0 LIMESTONE 50.0 55.0 FRACTURE, GREEN SHALE, OIL 55.0 62.0 SOFT LIMESTONE LIGHT BROWN 62.0 84.9 LIMESTONE; SMALL FRACTURES

WELL CONSTRUCTION

From To Casing Inside Outside Slot Type Material (ft.) (ft.) Type Dia.(in) Dia.(in) Size(in) 0 19.0 casing 5.00 INSERT BLACK IRON 19.0 84.9 open hole 5.00

Top of Casing: 1.0 ft. below ground

No pump test data for this well.

REMARKS

S. SIDE OF PULP MILL

Well PID: 62794 Owner: MANFOR Driller: WATER'S DRILLING CO. LTD. Well Name: #8 Well Use: **TEST WELL** Water Use: UTMX: 354441 UTMY: 5971075 Accuracy XY: UNKNOWN UTMZ: Accuracy Z: Date Completed: 1988 Nov 17 WELL LOG

LOCATION: 26-56-26W

From To Log (ft.) (ft.) 0 3.0 GREY TILL 3.0 13.0 BROWN CLAY BOULDERS 13.0 23.0 LIMESTONE; BROWN 23.0 50.0 LIMESTONE; LIGHT BROWN 50.0 57.0 FRACTURED, SHALE, BROKEN ROCK, WATER 57.0 74.0 LIMESTONE; SMALL FRACTURES 74.0 74.5 FRACTURE 74.5 89.9 LIMESTONE 89.9 96.9 FRACTURED ZONE, SAND, WATER 96.9 101.9 LIMESTONE 101.9 102.9 FRACTURE

102.9 119.9 LIMESTONE

WELL CONSTRUCTION

From To CasingInside Outside SlotTypeMaterial(ft.)(ft.) TypeDia.(in) Dia.(in) Size(in)019.0 casing5.00INSERTBLACK IRON19.0119.9 open hole5.005.005.005.005.00

Top of Casing: 1.5 ft. below ground

No pump test data for this well.

REMARKS

S. SIDE PULP MILL, S. OF #7 NO OIL

Well PID: 62770 Owner: MANFOR Driller: WATER'S DRILLING CO. LTD. Well Name: #9 Well Use: **TEST WELL** Water Use: UTMX: 354441 UTMY: 5971075 Accuracy XY: UNKNOWN UTMZ: Accuracy Z: Date Completed: 1988 Nov 18

LOCATION: 26-56-26W

WELL LOG

From To Log (ft.) (ft.) 0 3.0 GREY TILL 3.0 26.0 BROWN CLAY BOULDERS 26.0 33.0 LIMESTONE; BROWN 33.0 50.0 LIMESTONE; SMALL FRACTURES 50.0 55.0 FRACTURES LARGE 55.0 57.0 FRACTURE, SHALE, LOTS OF OIL 57.0 60.0 LIMESTONE

WELL CONSTRUCTION

From To CasingInside Outside SlotTypeMaterial(ft.)(ft.) TypeDia.(in) Dia.(in) Size(in)027.0 casing5.00INSERTBLACK IRON27.060.0 open hole5.005.005.005.005.00

Top of Casing: 1.0 ft. below ground

No pump test data for this well.

REMARKS

E. SIDE PULP MILL