

## Fisher, Sandra L CITZ:EX

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**From:** ENV Authorizations Reporting ENV:EX  
**Sent:** December 29, 2020 2:49 PM  
**To:** Stacy Boczulak  
**Subject:** RE: 108950 2020 Progress Report Submission SUB ACCPT

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Dear Authorization Holder:

The report submission has been accepted and placed on file.

This acceptance should not be interpreted as a statement regarding a determination of compliance findings.

Thank you for providing your authorization monitoring report/data.

Yours truly,

Routine Environmental Reporting Submission Mailbox  
Ministry of Environment and Climate Change Strategy

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**From:** Stacy Boczulak <boczulaks@ae.ca>  
**Sent:** December 28, 2020 10:16 AM  
**To:** ENV Authorizations Reporting ENV:EX <envauthorizationsreporting@gov.bc.ca>  
**Cc:** Melissa Duke <melissa.duke@lpcorp.com>; Heather Lawrence <Heather.Lawrence@lpcorp.com>  
**Subject:** 108950 2020 Progress Report Submission

**[EXTERNAL] This email came from an external source. Only open attachments or links that you are expecting from a known sender.**

Hi,

Please find the final monitoring report for Approval 108950 attached. Feel free to contact me with any questions.

Regards,  
Stacy

Stacy Boczulak, M.Sc., P.Ag., R.P.Bio.  
Environmental Scientist  
Associated Environmental Consultants Inc.  
Suite 500 - 2889 East 12th Avenue, Vancouver, BC V5M 4T5  
Tel: 604.293.1411 | Cel: 604.341.9708 | Dir: 236.317.2360



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COMPANIES

Platinum  
Partner

As COVID-19 cases continue to increase, to support provincial governments' and health authorities' recommendations to limit interactions, our office will close from 5 pm Friday, December 18, 2020 to 8 am Monday, January 11, 2021. During this period, I will be working from home, except during the holidays from December 23, 2020 to January 2, 2021. Your projects are our priority. Please contact me with any concerns

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**Attachments:** 108950\_2020\_AnnRpt\_V1.pdf

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# REPORT

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**Louisiana-Pacific Canada Ltd.**

**Amendment Land Application  
Approval / Amendment 108950  
2020 Annual Report**



DECEMBER 2020

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This report was prepared by Associated Environmental Consultants Inc. for the account of Louisiana-Pacific Canada Ltd.. The material in it reflects Associated Environmental Consultants Inc.'s best judgement, in the light of the information available to it, at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Associated Environmental Consultants Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

## EXECUTIVE SUMMARY

Associated Environmental Consultants Inc. (Associated) is responsible for monitoring the land application of Louisiana-Pacific Canada Ltd. (LP) wood ash generated at Oriented Strand Board (OSB) mills in Dawson Creek (Dawson) and Fort St. John (Peace Valley), British Columbia. LP recovers wood ash, a high-nutrient by-product comprising both bottom and fly ash, from the mill burners and applies it as a soil amendment to agricultural lands in the Peace River Regional District.

LP is authorized to conduct the Amendment Land Application Program (ALAP) that discharges wood ash to agricultural land under Approval 108950 issued by the BC Ministry of Environment and Climate Change Strategy in August 2017. In February 2018, an Amendment to the Approval was granted to allow ash to be mixed with wood mulch produced through the OSB milling process, creating a wood mulch-ash blend (i.e., amendment) that makes the ash easier to handle and spread. The authorized period for discharge was from August 22, 2017 to October 31, 2019, which allowed data capture during two growing seasons.

The last of the wood ash discharged under the ALAP was spread in spring 2019. In early 2019, the Dawson mill began producing siding in addition to OSB, which involves the treatment of wood with resins, paints and zinc borate. Due to this change in process (subsequently changing the ash properties), ash produced at the Dawson mill since 2019 has not been spread on agricultural properties. Associated applied for new Approvals (i.e., one for each mill) on behalf of LP in summer 2019 to incorporate the changes and allow the ALAP to continue for another three years; however, these efforts have been abandoned due to the curtailment of operations at the Dawson mill and the indefinite curtailment of the Peace Valley mill, which occurred in mid-2019.

This 2020 Annual Report summarizes only the results of soil quality monitoring on fields spread in 2019 (i.e., the final year of the ALAP under Approval 108950). All other components of the ALAP are complete.

According to pre- and post-application monitoring results, the amendment is suitable for improving soil conditions when application is managed correctly (i.e., monitoring of soils and amendment to determine an application rate and spread in a manner that reduces risks to the environment). Before the addition of the amendment, receiving soils had low pH (i.e., 5.4 average in top 15 cm) and low concentrations of nutrients. After the addition of the amendment, the results of soil sample analyses indicated that the agriculture capabilities of the receiving soils improved (i.e., neutralized pH and increased concentrations of plant-beneficial macronutrients, secondary nutrients, and micronutrients).

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## 1 INTRODUCTION

Louisiana-Pacific Canada Ltd. (LP) is authorized to conduct the Amendment Land Application Program (ALAP) that discharges wood ash from the Oriented Strand Board (OSB) mills in Dawson Creek (Dawson) and Fort St. John (Peace Valley) for application on agricultural land, under Approval 108950 issued on August 22, 2017 and Approval Amendment issued on February 19, 2018 by the Ministry of Environment and Climate Change Strategy (ENV) (Appendix A). The wood ash comprises both bottom and fly ash from the Dawson and Peace Valley mill burners, which is applied to agricultural soils as a soil amendment and liming agent in the Peace River Regional District. The Approval Amendment allows the ash to be blended with wood mulch produced through the OSB milling process. The wood mulch-ash blend (i.e., amendment) is mixed at a ratio of 3:1 to allow easier spreading of the ash. Primary goals of the ALAP are to increase soil pH and nutrients through the land application of wood ash to improve soil fertility and soil tilth, increase crop yield, and control weeds.

LP retained Associated Environmental Consultants Inc. (Associated) to monitor the land application of the amendment under the ALAP. 2020 was the final year of the ALAP as the authorization period for discharge was from August 22, 2017 to October 31, 2019, which allowed data capture during two growing seasons. In addition, as of mid-2019, operations at the Dawson mill have been curtailed, and the Peace Valley mill has been indefinitely curtailed.

In early 2019, the Dawson mill expanded their operations to produce siding in addition to OSB. This new process involves the treatment of wood with resins, paints and zinc borate. Due to this new process, ash produced at the Dawson mill in 2019 was not spread, and a new Approval was applied for to authorize the land application of the new ash on a trial basis. This application has since been abandoned due to the curtailment of operations at the Dawson mill.

This report is the 2020 Annual Report (i.e. the final report) as required under the Approval to be provided to ENV by December 31, 2020. The report summarizes the results of pre- and post-application soil quality monitoring of fields spread in 2019. The methodology to complete the ALAP, the approach to monitoring amendment quality and characteristics, and amendment application techniques are described in previous reports submitted by Associated throughout the ALAP, namely progress reports in September 2018 and December 2018 (Associated 2018) and an annual report in December 2019 (Associated 2019).

## 2 SOIL QUALITY MONITORING METHODS

Associated conducted pre-application soil quality monitoring on October 9 and 23, 2017. Receiving soils were sampled to determine baseline pH, nutrient and metal concentrations. Soil samples for pre-application monitoring were taken at two depths (i.e., 15 and 30 cm) so the movement of nutrients and metals through the soil could be traced. Samples were submitted to Pacific Soil Analysis Inc. and Element for analysis of pH, total macronutrients (N, P, K, Ca, Mg, Na), available nutrients (NO<sub>3</sub>, NH<sub>4</sub>, PO<sub>4</sub>, Ca, Mg, K, Cu, Zn, Fe, Mn, B, SO<sub>4</sub>, Al), and total metals.

Associated conducted post-application soil quality monitoring on October 30 and November 6, 2018, October 23, 2019, and May 14 and October 12, 2020 after crops had been harvested from the amended fields. Receiving soils were sampled at the same depths as pre-application monitoring and analyzed for the same parameters. Field locations as well as results from lab analyses of pre- and post-application soil samples are summarized in Appendix B.

### 3 SOIL QUALITY MONITORING RESULTS

#### 3.1 Pre-Application

Generally, pre-application soils had a low pH (i.e., average of 5.4 in the top 15 cm and average of 6.3 in the top 30 cm) and were deficient in plant micro- and macronutrients including nitrogen, phosphorus, potassium, sulphur, and copper. Soils of the receiving agricultural fields are classified as Orthic Gray Luvisol (Province of British Columbia 2020), which is characterized as having moderate drainage, silty surface horizons with low organic matter, and clayey subsoil horizons (Pettapiece, Robertson and Anderson 2010). Due to the clayey texture, these soils typically have high buffering capacities, which decreases the potential for the amendment to cause contamination issues (Agriculture Canada 1986).

#### 3.2 Post-Application

The Approval requires that fields undergo one full growing season between amendment application and post-application monitoring, so fields were resampled in fall of the following year. Overall, the results of post-application monitoring for nutrients indicate that ash as a soil amendment is beneficial for agriculture purposes and is a low risk to the environment. In 2020, post-application monitoring was conducted on fields LP3, LP7, LP8 and LP9, which were spread in fall 2019, excluding LP8, which was spread in spring 2018. Monitoring and application dates for all fields are summarized in Table 3-1. Monitoring results for parameters specified under the Approval as requiring assessment are discussed in the following subsections.

##### 3.2.1 pH

Post-application monitoring of fields amended in 2020 indicates that the pH increased by an average of 1.1 after the addition of amendment from an average of 5.8 pre-application to 7.0 post-application (Appendix B). Considering that a goal of the ALAP is to increase soil pH in the receiving environment to 6.5 (the ideal pH of soil for crop production is typically between 5.5 and 7.0), these results demonstrate that the addition of soil amendment is an effective method to neutralize acidic soils and achieve a pH that allows nutrients to be more readily available.

##### 3.2.2 Metals

Post-application monitoring of fields amended in 2020 indicates that metal concentrations have remained stable after the addition of amendment with an average relative percent difference of -4.4%, demonstrating that metal concentrations generally decreased (Appendix B). Arsenic was the only metal that exceeded the applicable standards and guidelines in 2020 in fields LP3, LP8 and LP9. Arsenic concentrations in the top 15 cm of the three fields increased slightly from baseline; however, when the stochastic effects of environmental variation are taken into consideration, changes to the concentrations of metals in the soil cannot be attributed to the addition of amendment with any certainty. Arsenic is present naturally in the environment from the weathering and eroding of bedrock. Arsenic concentrations in uncontaminated soil in Canada are naturally highly variable and can range from 4.8 mg/kg to 13.6 mg/kg, depending on local bedrock geology (CCME 2001).

##### 3.2.3 Nutrients

Post-application monitoring results do not indicate any exceedances of nutrients. Adding amendment to agriculture soils resulted in an overall increase in the concentrations of the beneficial plant macronutrients potassium and phosphorus, secondary nutrients calcium and sulphate, and micronutrients boron, zinc, and iron in most fields. In addition, the carbon to nitrogen ratio decreased in all amended fields.

**Table 3-1**  
**Monitoring and application dates for all fields in the ALAP**

Field Number	Pre-Application Monitoring Date	Application Date	Post-Application Monitoring Date
LP1a	Fall 2017	Spring 2018	Fall 2018
LP1b		Spring 2018	Fall 2018
LP1c		Fall 2018	Fall 2019
LP2		Fall 2018	Fall 2019
LP3		Fall 2019	Fall 2020
LP4 <sup>1</sup>		-	-
LP5		Fall 2018	Fall 2019
LP6		Fall 2018	Fall 2019
LP7		Fall 2019	Fall 2020
LP8 <sup>2</sup>		Spring 2018	Fall 2018, Fall 2020
LP9		Fall 2019	Fall 2020
LP10 <sup>1</sup>		-	-

**Notes:**

1. Fields LP4 and LP10 were not spread with amendment.
2. Field LP8 was sampled twice post-application. The first time was only four months after application, and the second time was one full growing season after application.

## 4 CLOSURE

This report was prepared for the Louisiana-Pacific Canada Ltd. and the Ministry of Environment and Climate Change Strategy to satisfy the reporting requirements of Approval 108950.

The results of 2020 monitoring indicate that the discharge of amendment to agricultural land from November 2017 to December 2020 is compliant with Approval 108950. The addition of amendments to the soil effectively increased pH and improved the fertility of the soil by adding micro- and macronutrients beneficial to plant growth. Fields that were previously in poor agricultural condition (i.e., acidic with low nitrogen and phosphorus) are more suitable for crop production post-application. To date, the application of ash as a soil amendment has proven to be a beneficial use of a waste product with very low risk to the environment.

The services provided by Associated Environmental Consultants Inc. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Yours truly,



Stacy Boczulak, M.Sc., P.Ag., R.P.Bio.  
Environmental Scientist

## REFERENCES

- Agriculture Canada. 1986. Soils of the Fort St. John – Dawson Creek Area, British Columbia. Prepared by the British Columbia Soil Survey. Available at: <http://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=5502> Accessed November 2020.
- Associated Environmental Consultants Inc. (Associated). 2018. Ash Land Application – Approval 108950 Progress Report. Consultants report prepared for Louisiana-Pacific Canada Ltd.
- Associated Environmental Consultants Inc. (Associated). 2019. Amendment Land Application – Approval / Amendment 108950 2019 Annual Report. Consultants report prepared for Louisiana-Pacific Canada Ltd.
- Canadian Council of Ministers of the Environment (CCME). 2001. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health: Arsenic (Inorganic), 1997, updated 2001. Available at: <http://cegg-rcqe.ccme.ca/download/en/257> Accessed November 2020.
- Pettapiece, W., J. Robertson, and D. Anderson. 2010. Cultivated Gray Luvisol Soils of the Prairie Region. *Prairie Soils & Crops Journal*. 3: 73-83.
- Province of British Columbia. 2020. iMapBC. Available at: <https://www2.gov.bc.ca/gov/content/data/geographic-data-services/web-based-mapping/imapbc> Accessed November 2020.

## APPENDIX A - APPROVAL AND APPROVAL AMENDMENT

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February 19, 2018

Tracking Number: 367212  
Authorization Number: 108950

**REGISTERED MAIL**

Louisiana-Pacific Canada Ltd.  
8243 221 Road  
Dawson Creek BC V1G 4P2

Dear Approval Holder:

Enclosed is amended Approval 108950 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the amended Approval.

This approval does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the Approval Holder. This approval is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the Approval Holder to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this Approval will be carried out by staff from the Environmental Protection Division's Regional Operations Branch. Plans, data and reports pertinent to the Approval are to be submitted by email or electronic transfer to the Director. To meet the reporting requirements in a form and manner acceptable to the Director, reports and notifications related to the administration of this approval must be submitted electronically to the following ministry email address:

- [EnvAuthorizationsReporting@gov.bc.ca](mailto:EnvAuthorizationsReporting@gov.bc.ca) for monitoring and annual reports.
- [EnvironmentalCompliance@gov.bc.ca](mailto:EnvironmentalCompliance@gov.bc.ca) for non-compliance reports and emergency notifications.

For further information, please visit the ministry's Data and Report Submissions web page at <http://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/data-and-report-submissions>.



Yours truly,

A handwritten signature in dark ink, appearing to read "Ed A. Hoffman". The signature is written in a cursive, slightly slanted style.

Ed A. Hoffman  
for Director, *Environmental Management Act*  
Authorizations - North Region

Enclosure



MINISTRY OF  
ENVIRONMENT

**APPROVAL**

108950

*Under the Provisions of the Environmental Management Act*

**LOUISIANA-PACIFIC CANADA LTD.**

**8243 221 Road  
Dawson Creek BC V1G 4P2**

**And**

**8220 259<sup>th</sup> Road  
Fort St. John B.C. V1J 4M6**

is authorized to discharge **biomass energy system ash blended with wood mulch** to agricultural land from the Louisiana-Pacific Oriented Strand Board Manufacturing Facilities located in Ft. St. John and Dawson Creek, British Columbia, subject to the terms and conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may lead to prosecution.

This authorization supersedes and replaces all previous versions of Approval 108950 issued under Section 15 of the *Environmental Management Act*. This discharge is authorized to occur from **April 1, 2018-October 31, 2018** and **April 1, 2019-October 31, 2019**.

**1. DEFINITIONS**

In addition to the definitions contained within the Code of Practice for Soil Amendments for the purposes of this approval the following definitions apply:

“Amendment Blend” means:

- A blend of Wood Ash and Soil Amendment - “Code of Practice for Soil Amendments” (e) industrial residue of wood, at a ratio of 3:1.

“CCME Soil Guidelines” means:

- Canadian Council of the Ministers of the Environment (CCME) 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health

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Date amended: February 19, 2018  
(most recent)

Ed A. Hoffman  
for Director, *Environmental Management Act*  
Authorizations - North Region

“Code of Practice for Soil Amendments” (SACoP) means:

- B.C. Reg. 210/2007.

“Contaminated Sites Regulations” (CSR) means:

- B.C. Reg. 375/96

“Parcel” of land” means:

- Same as the in the *Land Title Act* [RSBC 1996] Chapter 250

“Qualified Professional” means:

- an applied scientist or technologist specializing in an applied science or technology applicable to the duty or function, including, if applicable and without limiting this, agrology, biology, chemistry, engineering, geology or hydrogeology and who
  - i. is registered with the appropriate professional organization, is acting under that organization's code of ethics and is subject to disciplinary action by that organization, and
  - ii. through suitable education, experience, accreditation and/or knowledge, may be reasonably relied on to provide advice within their area of expertise.

All documents submitted to the Director by a Qualified Professional must be signed by the author(s).

“Soil Amendment” as per SACoP means:

- (e) industrial residue of wood that has not been treated with glue, paint, a preservative or another substance harmful to humans, animals or plants;

“Wood Ash” means:

- Bottom or fly ash from an bioenergy system using the following clean fuels:
  - wood or clean wood products;
  - hogfuel;
  - manufactured wood fuel;
  - logging residue;
  - confidential paper records from corporate or law enforcement sources; or
  - any biomass based fuels approved by the Director.

but does not include any ash from:

- other paper or paper products;
- effluent treatment sludge;
- wood or wood product that has been treated with unapproved glue, paint or preservative or that contains a foreign substance harmful to humans, animals or

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Ed A. Hoffman  
for Director, *Environmental Management Act*  
Authorizations - North Region

plants when combusted; or municipal solid waste or construction debris.

## 2. **AUTHORIZED DISCHARGE**

This section applies to the discharge of Wood Ash blended with Soil Amendment - (e) industrial residue of wood ("Amendment Blend") to private land. The site reference number for this discharge is E309171.

- 2.1 An average rate of discharge is 27 odt/ha.
- 2.2 The maximum rate of discharge is 16,800 tonnes over the duration of this approval.
- 2.3 The authorized discharge period is 7 months per year, 7 days per week.
- 2.4 The characteristics of the discharge must be equivalent to or better than the parameters and conditions listed in section 6 of the SACoP.
- 2.5 No other material is authorized to be discharged under this Approval.
- 2.6 The properties of amended soils must not exceed either the CSR Generic Soil Standards or the CCME Soil Guidelines.
- 2.7 The location of the facilities from which the discharge originates is:  
LP: Peace Valley OSB: North East 1/4 of Section 28 and South 1/2 of Section 33, Township 83, Range 18, Peace River Land District, except Parcel A (G14676) and Plans 33226 and H660; and  
LP: Dawson Creek OSB: SE 1/4 of Sec 29 TP 78 R 15 W6M Peace River EXC PLS A938S1774 16887 17253 20039 20294 & PCL A (44012M)
- 2.8 The location of the discharge is:  
Variable within the boundaries of the Peace River Regional District.

## 3. **GENERAL REQUIREMENTS**


### 3.1 **Land Application Plan Requirements**

Prior to application of the Amendment Blend to a parcel of land, a qualified professional must:

- a) Assess the suitability a land to ensure that treatment will not cause CSR Generic Soil Standards or the CCME Soil Guidelines to be exceeded; and
- b) Prepare an application plan that meets the requirements of section 8 of the SACoP.

The application of the Amendment Blend must be conducted in accordance with

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for Director, *Environmental Management Act*  
Authorizations - North Region

the plan.

Modifications of the plan must be approved by a Qualified Professional and made available to an Officer immediately upon request. The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, approved levels must not be exceeded.

### **3.2 Storage and Transport**

Amendment Blend material must not be transported off the originating sites unless the material is loaded and covered as to prevent dropping, shifting, leaking or otherwise escaping there from.

Amendment Blend material may only be stored at a temporary storage site if the storage site meets the conditions of sections 4 and 5 of the SACoP.

### **3.3 Application of Materials**

The Amendment Blend material must not be mixed with other wastes, prior to application.

The material must not be applied to frozen ground.

The material must not be applied to areas subject to flooding.

### **3.4 Notice of Amendment Blend application**

At least 30 days before a proposed application to land of more than 5 m<sup>3</sup> of soil amendments, the discharger must give notice

- (a) to the director,
- (b) if the land is within an agricultural land reserve as defined in the *Agricultural Land Commission Act*, to the Provincial Agricultural Land Commission.

Notice must be given in the form set out in Schedule 1 of the SACoP.

If within 30 days of receiving notice, the director requests from the discharger additional information, the discharger

- (a) must provide that additional information to the director, and
- (b) must not apply the Amendment Blend to the application site for at least 30 days after providing that additional information.

If information provided to the director satisfies the director that site-specific standards or management practices respecting the application of the Amendment

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for Director, *Environmental Management Act*  
Authorizations - North Region

Blend to the application site are necessary to protect human health or the environment, the director may, within 30 days, require the discharger to comply with site-specific standards or management practices specified by the director.

The time limits in subsections may be amended by agreement between the director and the discharger as applicable.

### **3.5 Certification of Qualified Professional**

After each application of Amendment Blend to an application site, the discharger must obtain the certification of a qualified professional that the application was carried out in accordance with the land application plan.

### **3.6 Fugitive Emissions**

If fugitive dust from the Amendment Blend application becomes a concern, the Director will, in consultation with the Approval Holder, evaluate the sensitivity of the receiving environment, the contribution of the sources, plus any other pertinent information. The Director may require development and submission of a Fugitive Dust Management Plan or additional control measures on fugitive dust sources.

## **4. MONITORING AND REPORTING REQUIREMENTS**

The Director may, in writing, change the monitoring and reporting requirements outlined below. All submissions under this Approval must be in a format acceptable to the Director.

### **4.1 Sampling Procedures**

Sampling is to be carried out in accordance with the procedures described in the most recent edition of the "British Columbia Field Sampling Manual for Continuous Monitoring Plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). A copy of the manual may be viewed online at:

[www.env.gov.bc.ca/epd/wamr/labsys/field\\_man\\_03.html](http://www.env.gov.bc.ca/epd/wamr/labsys/field_man_03.html)

### **4.2 Analytical Procedures**

Analyses are to be carried out in accordance with procedures described in the most recent edition of the "British Columbia Laboratory Methods Manual for the

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for Director, *Environmental Management Act*  
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Analysis of Water, Wastewater, Sediment, Biological Materials and Discrete Ambient Air Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publication Centre, P. O. Box 9452, Stn. Prov. Govt. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). A copy of the manual may be viewed online at:

[www.env.gov.bc.ca/epd/wamr/labsys/lab\\_meth\\_manual.html](http://www.env.gov.bc.ca/epd/wamr/labsys/lab_meth_manual.html)

#### **4.3 Amendment Monitoring**

The Amendment Blend must be sampled and analysed by a qualified professional at a minimum of one composite sample per 1,000 dry tonnes of Amendment Blend material from the originating facility.

A minimum of one composite sample from each field must be taken after first season harvest and the soils assessed for:

- i. chemical and physical property changes at 0-15cm and 15 to 30cm depth,
- ii. agronomic nutrient analysis (macro- N, P, K, Ca, Mg, Na, SO<sub>4</sub>-S, and micro- Cu, Zn, Fe, Mn, B); and
- iii. pH, carbon, and salinity; and total metals.

#### **4.4 Reporting**

A progress report must be provided to the Ministry by September 30, 2018 and September 30, 2019. A final results report must be provided by December 31, 2019. The reports must contain the following information:

1. Results of the Amendment Blend monitoring and comparison with the applicable SACoP, CSR and CCME Soil standards.
2. Amendment locations, application rates and dates of application.

#### **4.5 Non-compliance Reporting**

The Approval Holder must notify the Director, within 72 hours, of any non-compliance with the requirements of this Approval and take appropriate remedial action. Written confirmation of all non-compliance events, including available test results is required within 30 days of the original notification unless otherwise directed by the Director, Environmental Protection.

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Date amended: February 19, 2018  
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for Director, *Environmental Management Act*  
Authorizations - North Region



August 22, 2017

Tracking Number: 362435  
Authorization Number: 108950

**REGISTERED MAIL**

LOUISIANA-PACIFIC CANADA LTD.  
8243 221 Road  
Dawson Creek BC V1G 4P2

Dear Approval Holder:

Enclosed is Approval 108950 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the approval.

This approval does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the approval holder. This approval is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the approval holder to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this approval will be carried out by staff from the Environmental Protection Division's Regional Operations Branch. Plans, data and reports pertinent to the approval are to be submitted by email or electronic transfer to the Director. To meet the reporting requirements in a form and manner acceptable to the Director, reports and notifications related to the administration of this approval must be submitted electronically to the following ministry email address:

- [EnvAuthorizationsReporting@gov.bc.ca](mailto:EnvAuthorizationsReporting@gov.bc.ca) for monitoring and annual reports.
- [EnvironmentalCompliance@gov.bc.ca](mailto:EnvironmentalCompliance@gov.bc.ca) for non-compliance reports and emergency notifications.



For further information, please visit the ministry's Data and Report Submissions web page at <http://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/data-and-report-submissions>.

Yours truly,

A handwritten signature in black ink, appearing to be 'D. Bings', with a large, stylized loop at the end.

Daniel P. Bings  
for Director, *Environmental Management Act*  
Authorizations - North

Enclosure

cc: Environment Canada



MINISTRY OF  
ENVIRONMENT

**APPROVAL**

**108950**

*Under the Provisions of the Environmental Management Act*

**LOUISIANA-PACIFIC CANADA LTD.**

**8243 221 Road  
Dawson Creek BC V1G 4P2**

**And**

**8220 259<sup>th</sup> Road  
Fort St. John B.C. V1J 4M6**

is authorized to discharge biomass energy system ash to agricultural land from the Louisiana-Pacific Oriented Strand Board Manufacturing Facilities located in Ft. St. John and Dawson Creek, British Columbia, subject to the terms and conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may lead to prosecution.

This discharge is authorized to occur from the issue date of this Approval to November 22, 2018.

**1. DEFINITIONS**

In addition to the definitions contained within the Code of Practice for Soil Amendments for the purposes of this approval the following definitions apply:

“Biomass Ash” means:

- Bottom or fly ash from an bioenergy system using the following clean fuels:
  - wood or clean wood products;
  - hogfuel;
  - manufactured wood fuel;
  - logging residue;

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- confidential paper records from corporate or law enforcement sources; or
  - any biomass based fuels approved by the Director.
- but does not include any ash from:
    - other paper or paper products;
    - effluent treatment sludge;
    - wood or wood product that has been treated with unapproved glue, paint or preservative or that contains a foreign substance harmful to humans, animals or plants when combusted; or municipal solid waste or construction debris.

“Bottom Ash” means:

- the ash component remaining in the bioenergy system following combustion.

“Fly Ash” means:

- the ash removed from the bioenergy system exhaust gas via a pollution control device such as an electrostatic precipitator.

“Code of Practice for Soil Amendments” (SACoP) means:

- B.C. Reg. 210/2007.

“Contaminated Sites Regulations” (CSR) means:

- B.C. Reg. 375/96

“CCME Soil Guidelines” means:

- Canadian Council of the Ministers of the Environment(CCME) 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health

“Parcel” of land” means:

- Same as the in the *Land Title Act* [RSBC 1996] Chapter 250

## 2.1 **Authorized Sources**

This section applies to the discharge of refuse from a Biomass Ash. The site reference number for this discharge is E309171.

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- 2.1.1 An average rate of discharge is 20 odt/ha.
- 2.1.2 The maximum rate of discharge is 12,600 tonnes over the duration of this approval.
- 2.1.3 The authorized discharge period is 12 months per year, 7 days per week.
- 2.1.4 The characteristics of the discharge must be equivalent to or better than the parameters and conditions listed in section 6 of the **SACoP**.
- 2.1.5 The properties of amended soils must not exceed either the **CSR** Generic Soil Standards or the **CCME Soil Guidelines**.
- 2.1.6 The location of the facilities from which the discharge originates is:  
  
LP: Peace Valley OSB: North East 1/4 of Section 28 and South 1/2 of Section 33, Township 83, Range 18, Peace River Land District, except Parcel A (G14676) and Plans 33226 and H660; and  
  
LP: Dawson Creek OSB: SE 1/4 of Sec 29 TP 78 R 15 W6M Peace River EXC PLS A938S1774 16887 17253 20039 20294 & PCL A (44012M)
- 2.1.7 The location of the discharge is:

Variable within the boundaries of the Peace River Regional District.

### 3. **GENERAL REQUIREMENTS**

#### 3.1 **Land Application Plan Requirements**

Prior to application of the ash as a soil amendment to a parcel of land, a qualified professional must:

- a) Assess the suitability a land to ensure that treatment will not cause **CSR** Generic Soil Standards or the **CCME Soil Guidelines** to be exceeded; and
- b) Prepare an application plan that meets the requirements of section 8 of the **SACoP**.

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The application of the soil amendments must be conducted in accordance with the plan.

Modifications of the plan must be approved by a Qualified Professional and made available to an Officer immediately upon request. The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, permitted levels must not be exceeded.

### 3.2 **Storage and Transport**

Soil amendment material must not be transported off the originating sites unless the material is loaded and covered as to prevent dropping, shifting, leaking or otherwise escaping there from.

Soil amendment material may only be stored at a temporary storage site if the storage site meets the conditions of sections 4 and 5 of the **SACoP**.

### 3.3 **Application of Materials**

The ash material must not be mixed with other wastes prior to application.

The material must not be applied to frozen ground.

The material must not be applied to areas subject to flooding.

### 3.4 **Notice of Soil Amendments**

At least 30 days before a proposed application to land of more than 5 m<sup>3</sup> of soil amendments, the discharger must give notice:

- (a) to the director,
- (b) if the land is within an agricultural land reserve as defined in the *Agricultural Land Commission Act*, to the Provincial Agricultural Land Commission.

Notice must be given in the form set out in Schedule 1 of the **SACoP**.

If within 30 days of receiving notice, the director requests from the discharger additional information, the discharger

- (a) must provide that additional information to the director, and

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(b) must not apply the soil amendments to the application site for at least 30 days after providing that additional information.

If information provided to the director satisfies the director that site-specific standards or management practices respecting the application of the soil amendments to the application site are necessary to protect human health or the environment, within 30 days the director may require the discharger to comply with site-specific standards or management practices specified by the director.

The time limits in subsections may be amended by agreement between the director and the discharger as applicable.

### 3.5 **Certification of Qualified Professional**

After each application of soil amendments to an application site, the discharger must obtain the certification of a qualified professional that the application was carried out in accordance with the land application plan.

### 3.6 **Fugitive Emissions**

If fugitive dust from the ash application becomes a concern, the Director will, in consultation with the Permittee, evaluate the sensitivity of the receiving environment, the contribution of the sources, plus any other pertinent information. The Director may require development and submission of a Fugitive Dust Management Plan or additional control measures on fugitive dust sources.

## 4. **MONITORING AND REPORTING REQUIREMENTS**

The Director may, in writing, change the monitoring and reporting requirements outlined below. All submissions under this permit must be in a format acceptable to the Director.

### 4.1 **Analytical Procedures**

Sampling is to be carried out in accordance with the procedures described in the

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most recent edition of the "British Columbia Field Sampling Manual for Continuous Monitoring Plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). A copy of the manual may be viewed online at:

[www.env.gov.bc.ca/epd/wamr/labsys/field\\_man\\_03.html](http://www.env.gov.bc.ca/epd/wamr/labsys/field_man_03.html)

Analyses are to be carried out in accordance with procedures described in the most recent edition of the "British Columbia Laboratory Methods Manual for the Analysis of Water, Wastewater, Sediment, Biological Materials and Discrete Ambient Air Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publication Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). A copy of the manual may be viewed online at:

[www.env.gov.bc.ca/epd/wamr/labsys/lab\\_meth\\_manual.html](http://www.env.gov.bc.ca/epd/wamr/labsys/lab_meth_manual.html)

#### 4.2 **Amendment Monitoring**

The soil amendments must be sampled and analysed by a qualified professional at a minimum of one composite sample per 1000 dry tonnes of ash material from the originating facility.

A minimum of one composite sample from each field must be taken after first season harvest and the soils assessed for:

- i. chemical and physical property changes at 0-15cm and 15 to 30cm depth,
- ii. agronomic nutrient analysis (macro- N, P, K, Ca, Mg, Na, SO<sub>4</sub>-S, and micro- Cu, Zn, Fe, Mn, B); and
- iii. pH, carbon, and salinity; and total metals.

#### 4.3 **Reporting**

A copy of the progress report must be provided to the Ministry by March 31, 2018 and a copy of the final results must be provided by January 31, 2019. The

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reports must contain the following information:

1. Results of the soil amendment monitoring and comparison with the applicable SACoP, CSR and CCME Soil standards.
2. Amendment locations, application rates and dates of application.

#### 4.4 **Non-compliance Reporting**

The Permittee must notify within 72 hours the Director of any non-compliance with the requirements of this Approval and take appropriate remedial action. Written confirmation of all non-compliance events, including available test results is required within 30 days of the original notification unless otherwise directed by the Director, Environmental Protection.

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## APPENDIX B - PRE- AND POST-APPLICATION SOIL DATA

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Google Earth

Image © 2018 DigitalGlobe  
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Pre- and Post-Application Soil Metals																					
Field Number	Depth	Date	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Silver (Ag)	Thallium (Tl)	Tin (Sn)	Uranium (U)	Vanadium (V)	Zinc (Zn)
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Guidelines																					
CCME (Agriculture) <sup>1</sup>			20	12	750	4	1.4	64	40	63	70	-	5	50	1	20	1	5	23	130	200
CSR (AL) <sup>2</sup>			20	10	500	1 - 150 <sup>3</sup>	1 - 30 <sup>4</sup>	60	25	75 - 7500 <sup>5</sup>	120	0.6	15	70 - 500 <sup>6</sup>	4	20	9	5	30	100	200
Pre-Application Soil																					
LP1	15	9-Oct-17	0.35	6.5	167	0.6	0.2	23	7.1	12	11	0.03	0.9	21	0.2	0.1	0.2	<2.0	1.0	47	60
	30	9-Oct-17	0.90	11	251	1.2	0.08	37	12	26	15	0.06	1.8	39	0.7	0.2	0.3	<2.0	1.1	79	72
LP2	15	23-Oct-17	0.29	5.3	151	0.6	0.3	20	6.4	12	10	0.02	0.7	19	0.3	0.1	0.2	<2.0	1.4	41	63
	30	23-Oct-17	0.74	9.4	267	1.0	0.2	32	10	26	14	0.05	1.1	35	0.5	0.2	0.2	<2.0	1.6	65	82
LP3	15	23-Oct-17	0.30	6.3	128	0.5	0.3	18	9.1	10	11	0.02	0.8	17	0.2	<0.1	0.1	<2.0	0.8	39	58
	30	23-Oct-17	1.08	14	270	1.3	0.1	36	12	34	17	0.08	1.8	41	0.7	0.3	0.3	<2.0	1.6	74	86
LP4	15	23-Oct-17	0.43	8.0	173	0.7	0.3	23	8.2	20	11	0.04	1.1	23	0.5	0.1	0.2	<2.0	1.6	49	63
	30	23-Oct-17	0.81	10.0	354	1.0	0.2	29	11	26	14	0.07	1.2	38	0.4	0.3	0.2	<2.0	1.2	58	83
LP5	15	23-Oct-17	0.50	6.6	150	0.6	0.3	20	7.4	26	11	0.03	1.0	22	0.5	0.1	0.2	<2.0	1.2	44	64
	30	23-Oct-17	0.86	12	262	1.1	0.1	35	13	25	16	0.06	1.7	35	0.8	0.2	0.3	<2.0	1.3	70	85
LP6	15	23-Oct-17	0.30	5.6	108	0.4	0.2	17	6.5	8.7	9	0.02	0.8	14	<0.2	<0.1	0.1	<2.0	0.6	37	47
	30	23-Oct-17	0.73	11	166	0.9	0.08	28	8.9	20	15	0.06	1.3	25	0.6	0.1	0.2	<2.0	0.8	57	71
LP7	15	9-Oct-17	0.30	6.8	119	0.5	0.2	19	6.6	10	11	0.02	1.0	17	0.2	<0.1	0.1	<2.0	1.6	38	51
	30	9-Oct-17	0.74	10	282	0.9	0.1	29	9.7	22	14	0.06	1.3	31	0.5	0.2	0.2	<2.0	1.5	56	71
LP8	15	9-Oct-17	0.26	5.8	117	0.5	0.2	19	6.0	8.6	10	0.02	0.8	16	0.3	<0.1	0.1	<2.0	1.4	41	46
	30	9-Oct-17	1.07	13	360	1.4	0.1	40	14	35	17	0.07	1.6	48	0.6	0.3	0.3	<2.0	1.3	84	89
LP9	15	9-Oct-17	0.26	5.4	129	0.5	0.2	21	5.4	9.5	10	0.02	0.8	16	0.3	<0.1	0.2	<2.0	1.3	46	46
	30	9-Oct-17	0.89	12	265	1.2	0.1	38	31	28	17	0.06	1.5	36	0.7	0.2	0.3	<2.0	1.4	77	79
LP10	15	9-Oct-17	0.29	5.4	130	0.5	0.2	21	7.0	16	10	0.02	0.8	16	0.3	<0.1	0.2	<2.0	1.2	43	56
	30	9-Oct-17	1.04	13	271	1.2	0.1	34	21	30	17	0.07	1.7	40	0.6	0.2	0.3	<2.0	1.5	71	78
Post-Application Soil																					
LP1 a,b,c	15	23-Oct-19	0.3	6.8	150	0.6	0.4	16	7.2	10	11	0.02	1.1	18	<0.3	<0.1	0.1	<1.0	0.7	35	59
	30	23-Oct-19	0.6	9.3	180	0.8	0.1	25	11	18	13	0.04	1.5	29	0.6	0.1	0.2	<1.0	0.9	46	66
LP2	15	23-Oct-19	0.3	7.3	160	0.6	0.4	18	8	15	11	0.02	1.1	21	<0.3	<0.1	0.1	<1.0	0.8	38	66
	30	23-Oct-19	0.4	8.7	130	0.6	0.2	20	11	12	13	0.03	1.2	23	0.4	0.1	0.1	<1.0	0.7	38	57
LP3*	15	12-Oct-20	0.8	17	110	0.4	0.2	14	7.5	12	12	0.03	1.1	15	0.3	0.1	0.1	<1.0	0.7	30	59
	30	12-Oct-20	1.0	15	170	0.8	0.09	24	7.1	21	14	0.08	1.5	26	0.7	0.1	0.2	<1.0	0.8	42	74
LP4	15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	30	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
LP5	15	23-Oct-19	0.2	4.9	140	0.4	0.4	14	6.9	10	8.8	0.03	<1.0	17	0.3	0.1	0.09	<1.0	1.4	27	58
	30	23-Oct-19	0.2	5.8	99	0.4	0.2	14	5.6	5.7	9.5	0.01	<1.0	16	0.4	<0.1	0.10	<1.0	1.2	29	43
LP6	15	23-Oct-19	0.3	5.5	110	0.4	0.3	14	7.9	11	8.1	0.02	<1.0	17	<0.3	0.10	0.09	<1.0	0.6	29	55
	30	23-Oct-19	0.4	7.6	90	0.4	0.09	15	6.0	8.1	10	0.02	1.2	17	0.3	<0.1	0.1	<1.0	<0.5	30	46
LP7*	15	12-Oct-20	0.3	7.0	100	0.4	0.3	15	6.7	10	8.6	0.02	<1.0	15	0.3	<0.1	0.09	<1.0	0.8	32	59
	30	12-Oct-20	1.0	14	330	1.1	0.2	27	11	32	14	0.09	1.6	43	0.8	0.2	0.02	<1.0	1.3	49	100
LP8*	15	30-Oct-18	0.31	6.12	184	0.6	0.5	22	6.3	14	10	<0.05	0.9	18	0.2	<0.1	0.1	<2.0	1.3	47	84
		14-May-20	0.3	6.6	120	0.5	0.3	18	6.3	15	7.8	0.03	<1.0	20	<0.3	<0.1	0.1	<1.0	1.0	33	69
	30	30-Oct-18	0.80	11	338	1.2	0.2	40	12	29	14	0.07	1.2	42	0.5	0.2	0.3	<2.0	1.2	80	90
		14-May-20	0.7	11	250	0.9	0.3	33	13	26	11	0.06	1.3	44	0.6	0.2	0.1	<1.0	1.0	50	95
LP9*	15	12-Oct-20	0.3	7.7	140	0.5	0.3	17	8.3	10	9.5	0.02	<1.0	16	0.3	<0.1	0.1	<1.0	1.1	36	61
	30	12-Oct-20	0.9	13	260	1.0	0.2	28	10	29	13	0.07	1.5	41	0.7	0.2	0.2	<1.0	1.0	51	96
LP10	15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	30	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Notes:

- Indicates no existing guideline

\* Indicates analysis was completed in the current year (2020)

<sup>1</sup> Canadian Council of Ministers of the Environment (CCME). 2007. Canadian Environmental Quality Guidelines (CEQG), with amendments to 2013. Environment Canada, Winnipeg, Manitoba.

<sup>2</sup> Ministry of Environment. 1996. Contaminated Sites Regulation (CSR), BC Reg. 375/96. Environmental Management Act. BC Reg 375/96, OC 1480/96 and M271/2004 (with amendments to 2011). Province of British Columbia, Victoria, BC.

<sup>3</sup> Variable depending on pH: for pH < 6.5, Be = 1 mg/kg, for pH 6.5 to < 7.0, Be = 4 mg/kg, for pH 7.0 to < 7.5, Be = 30 mg/kg, for pH >= 7.5, Be = 150 mg/kg.

<sup>4</sup> Variable depending on pH: for pH < 7.0, Cd = 1 mg/kg, for pH 7.0 to < 7.5, Cd = 3 mg/kg, for pH 7.5 to < 8.0, Cd = 20 mg/kg, for pH >= 8, Cd = 30 mg/kg.

<sup>5</sup> Variable depending on pH: for pH < 5.5, Cu = 75 mg/kg, for pH 5.5 to < 6.0, Cu = 100 mg/kg, for pH 6.0 to < 6.5, Cu = 700 mg/kg, for pH 6.5 to < 7.0, Cu = 3000 mg/kg, for pH 7.0 to < 7.5, Cu = 6500 mg/kg, for pH >= 7.5, Cu = 7500 mg/kg.

<sup>6</sup> Variable depending on pH: for pH < 7.5, Ni = 70 mg/kg, for pH 7.5 to < 8.0, Ni = 250 mg/kg, for pH >= 8.0, Ni = 500 mg/kg.

Value exceeds CCME Standard

Value exceeds CSR Standard

Value exceeds CSR and CCME