Beneficial Use of Solid Waste Determination Evaluation Form

State of Oregon Department of Environmental Quality	**Applicant:**	Oregon Green Pros LLC and Freres Lumber Co., Inc.		
	BUD#:	BUD-20121017-OrGreenProsFreresLmbr		
	Solid Waste:	Biomass wood ash-bottom ash from co-generation system of Freres Lumber Mill in Lyons, Oregon		
	Summary of Proposed Beneficial Use:			
	Proposed uses: soil additives and soil amendments			
	Reviewers:	Hugh Gao, Bill Mason	**Date:**	July 22, 2013
	Tier:	☐ One ☒ Two ☐ Three		

Beneficial Use of Solid Waste

Beneficial use of solid waste is a productive use of solid waste in a manner that will not create an adverse impact to public health, safety, welfare or the environment.

The environmental benefits of substituting industrial waste materials for virgin materials includes conserving energy, reducing the need to extract natural resources and reducing demand for disposal facilities.

Oregon Administrative Rules 340-093-0280-0290 establish standing beneficial uses and a process for DEQ review of case-specific beneficial use proposals. Under these rules, DEQ may issue a beneficial use determination as an alternative to a disposal permit for proposals that meet the rule criteria. If approved, once a beneficial use determination is issued, DEQ no longer regulates the waste as a solid waste as long as the waste is used in accordance with the approved beneficial use determination.

Beneficial Use Determination Evaluation Summary

☒ Yes, the Beneficial Use of this solid waste meets all the case-specific performance criteria listed below and is approved.

☐ No, the Beneficial Use of this solid waste does not meet all the case-specific performance criteria listed below and is not approved.

Notes: *Identify if the applicant met the three performance criteria (OAR 340-093-0280, Case-Specific Beneficial Use Performance Criteria), or identify any deficiencies in the application and any DEQ recommendations for further action for the beneficial use application.*

Based on analytical results of ash samples for dioxin, arsenic, cadmium, mercury, lead, and nickel, values of the metals in the material meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. It is concluded that the material can be a beneficial as a soil additive and soil amendment and that it does not pose a significant impact to the environment and public health.

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	Applicant:	Oregon Green Pros LLC and Freres Lumber Co., Inc.
	BUD #:	BUD-20121017-OrGreenProsFreresLmbr
	Solid Waste:	Biomass wood ash (bottom ash) from co-generation system of Freres Lumber Mill in Lyons, Oregon
	Date:	October 17, 2012

Case-Specific Beneficial Use Performance Criteria:

DEQ may approve an application for a case-specific beneficial use of solid waste only if all the following performance criteria are addressed: 1) Characterization of the Solid Waste; 2) Productive Beneficial Use of the Solid Waste; and, 3) The affect of the Proposed Beneficial Use on Public Health, Safety, Welfare and/or the Environment.

1) Characterization of the Solid Waste

Did the applicant characterize the solid waste and proposed beneficial use sufficiently to demonstrate compliance with the rules for case-specific beneficial use determinations (OAR 340-093-0280) by submitting required information for the appropriate tier? **(**See tier sections below for detailed characterization information.)

☒ Yes ☐ No

Notes:

The applicant requests beneficial use of their biomass ash (wood ash including fly ash and bottom ash). The wood ash material is inorganic and organic residue remaining generated from the co-gen operation at the Freres Lumber Mill at Lyons. Wood ash is composed of many elements needed for plant growth. The majority of these elements are extracted from the soil and atmosphere during a tree's growth cycle. They are common elements in our environment and essential in the production of crops and forages. The ash provides a good source of potassium, magnesium, and aluminum. Although wood ash may contain a few elements that pose environmental concerns, such as heavy metals, they are relatively low and not in a highly extractable or available form.

Was the following information submitted for DEQ review and how adequate was it?

Tier 1 ☐ Applicable ☒ Not applicable

- Did the applicant provide an adequate description of the material proposed for beneficial use, the manner of generation and the estimated quantity to be used beneficially each year?

  ☒ Yes ☐ No

Notes:

The applicant proposes to sell their wood ash in bulk form and bagged to the general public as garden and landscape soil additives and soil amendment. The wood ash is generated from the co-gen combusting operation at the Freres Lumber Mill in Lyons, Oregon. An estimated 2,500 tons of the material will be generated each year and marketed to sell for beneficial use.

- Did the applicant provide an adequate description of the proposed beneficial use and justify how the proposed use is beneficial?

  ☒ Yes ☐ No

Notes:

Wood ash is a valuable source of lime, potassium and trace elements. Since wood ash is derived from plant material, it contains most of the 13 essential nutrients the soil must supply for plant growth. The carbonates and oxides remaining in the wood ash are valuable liming agents, raising pH, thereby helping to neutralize acid soils. Where soils are acid and low in potassium, wood ash is beneficial to most garden plants.

- Did the applicant provide a sufficient comparison of the chemical and physical characteristics of the material proposed for beneficial use with the material it will replace?

☒ Yes ☐ No

Notes:

The applicant provided analytical results of ash samples for dioxin, arsenic, cadmium, mercury, lead, and nickel. The values of the metals meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. The applicant also provided a comparison of the metals content in other soil amendment products on the market, and the metals concentrations were similar.

- Did the applicant successfully demonstrate compliance of the proposed beneficial use with the performance criteria in OAR 340-093-0280 based on knowledge of the process that generated the material, properties of the finished product, or testing?

☒ Yes ☐ No

Notes:

The applicant provided sufficient information to demonstrate and justify the proposed material is not a hazardous waste and the analysis values of the metals in the material meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. The material will be managed properly to prevent any adverse impact to the environment and to public health during the production, transportation, and application. Most of the material will be directly shipped to a bagging plant and packed into waterproof plastic bags and sealed. The bags will be stacked on pallets and stored in a warehouse to be delivered to customers to use as soil additives and soil amendments in their home gardens or lawns. Material destined for bulk sales will be managed so there is no stormwater runoff or blowing dust from the storage pile.

- If required, did the applicant provide any other DEQ required information to evaluate the proposal?

☐ Yes ☒ No

Notes:

No other information is needed. The applicant provided sufficient information for DEQ to make the determination.

Tier 2 ☒ Applicable ☐ Not applicable

- Did the applicant submit all the information required for a Tier 2 application?

☒ Yes ☐ No

Notes:

The applicant provided sufficient information for a Tier 2 application.

- Did the applicant submit adequate sampling and analysis to make a determination of suitability for beneficial use? (Note: The analysis must provide chemical, physical, and biological characterization of the material proposed for beneficial use and identify potential contaminants in the material or the end product, as applicable.)

☒ Yes ☐ No

Notes:

The applicant provided analytical results of ash samples for dioxin, arsenic, cadmium, mercury, lead, and nickel. The values of the metals meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. The applicant also provided a comparison of the metals content in other soil amendment products on the market, and the metals concentrations were similar.

- When applicable, did the applicant provide a risk screening comparing the concentration of hazardous substances in the material to existing, DEQ approved, risk-based screening level values, and demonstrate compliance with acceptable risk levels?

☒ Yes ☐ No

Notes:

The applicant provided analytical results of ash samples for dioxin, arsenic, cadmium, mercury, lead, and nickel. The values of the metals meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. The applicant also provided a comparison of the metals content in other soil amendment products on the market, and the metals concentrations were similar.

- When applicable, did the applicant supply the location or type of land use where the material will be applied, consistent with the risk scenarios used to evaluate risk? ☐ Yes ☒ No

Notes:

The applicant does not specify location and type of land for the material use as soil additives and soil amendment. The material will be sold to consumers at a market rate, and it is unlikely that consumers will apply the material to any location other than their own gardens or lawns. As proposed, the majority of the material will be shipped directly to a bagging plant and put into waterproof plastic bags and sealed. The bags will be stacked on pallets, stored in warehouse to be delivered to customers. Material destined for bulk sales will be managed so there is no stormwater runoff or blowing dust from the storage pile.

- When applicable, did the applicant supply contact information of property owner(s) if this is a site-specific land application proposal, including name, address, phone number, e-mail, site address and site coordinates (latitude and longitude)? ☐ Yes ☒ No

Notes:

Not applicable

- Did the applicant supply an adequate description of how the material will be managed to minimize potential adverse impacts to public health, safety, welfare, or the environment? ☒ Yes ☐ No

Notes:

The applicant provided DEQ with a copy of the label that will accompany each bag of soil amendment or each bulk sale, and the label provides instructions on the safe use of the product. The material will be managed properly to prevent any adverse impact to the environment and to public health during the production, transportation, and application. The majority of the material will be shipped directly to a bagging plant and put into waterproof plastic bags and sealed. The bags will be stacked on pallets, stored in warehouse to be delivered to customers. Material destined for bulk sales will be managed so there is no stormwater runoff or blowing dust from the storage pile.

Tier 3 ☐ Applicable ☒ Not applicable

- Did the applicant submit all the information required for a Tier 1 & Tier 2 application? ☒ Yes ☐ No

2) Productive Beneficial Use of the Solid Waste

Has the applicant demonstrated that the proposed beneficial use is a productive use of the material by providing information substantiating the criteria listed below? ☒ Yes ☐ No

Notes:

The applicant proposes to sell their wood ash in bulk or bagged form to the general public as garden and landscape soil additives and soil amendment. Wood ash is a valuable source of lime, potassium and trace elements. Since wood ash is derived from plant material, it contains most of the 13 essential nutrients the soil must supply for plant growth. The carbonates and oxides remaining in the wood ash are valuable liming agents, raising pH, thereby helping to neutralize acid soils. Where soils are acid and low in potassium, wood ash is beneficial to most garden plants. The applicant provided analytical results of ash samples for dioxin, arsenic, cadmium, mercury, lead, and nickel. The values of the metals meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. The applicant also provided a comparison of the metals content in other soil amendment products on the market, and the metals concentrations were similar.

- Did the applicant successfully identify or demonstrate a reasonably likely proposed beneficial use for the material that is not speculative? ☒ Yes ☐ No

This criterion consists of three parts.

1. Identified Use:
Has the applicant clearly stated what the waste is going to be used for, that the waste is compatible with that use and the proposed quantity is necessary?
☒ Yes ☐ No

2. Reasonably Likely Use:
Has the applicant identified, with supporting documentation, the timeframe within which this use is likely to occur (e.g., zoning info, master plan for development, letters from local jurisdictions, etc)?
☒ Yes ☐ No

3. Not Speculative:
For Land application - has this material been used at other sites for the same purpose, is the material feasible for use at this site for this purpose, or has the applicant identified a known potential for this use at this site?
☒ Yes ☐ No ☐ N/A

For uses other than land application - has the material been used in a product before, is the material feasible for use in a product, or has the applicant identified a known potential for use in this product?

☒ Yes ☐ No ☐ N/A

Notes:

The applicant provided industry examples for wood ash in agricultural use. http://wwww.woodash.net/index.html. Wood Ash Industries owns and operates a wood ash disposal and transfer site located in Gauthier Township, approximately 10 miles east of Kirkland Lake near the Ontario-Quebec border. The 25 year certificate of approval was granted in December of 2002 by the Ontario Ministry of Environment, it is the first privately owned wood ash disposal site of its kind in the province of Ontario.
The site receives wood ash from one source only, Kirkland Lake Power, a wood fired co-generation power plant located in Kirkland Lake, Ontario. All wood ash disposed at the site is fully recyclable for reuse under the existing certificate of approval. The Wood Ash contains Biochar suitable for Agricultural & Horticultural use.

- *Animal Bedding: Successfully field tested for use when mixed with wood shavings. After use the bedding can be composted with manure and later spread on fields doubling the economic savings.*
- *Soil amendment for bulk agricultural applications*
- *Soil amendment for bagged horticultural applications. Compost, odor and slug control.*
- *Conditions soil increasing soil fertility & crop yields and adjust pH upwards replacing agricultural lime.*

- Is the use a valuable part of a manufacturing process, an effective substitute for a valuable raw material or commercial product, or otherwise authorized by the Department and does not constitute disposal?

☒ Yes ☐ No

Notes:

The wood ash derived from plant material contains most of the 13 essential nutrients the soil must supply for plant growth. The carbonates and oxides remaining in the wood ash are valuable liming agents, raising pH, thereby helping to neutralize acid soils. Where soils are acid and low in potassium, wood ash is beneficial to most garden plants.

- Is the use in accordance with applicable engineering standards, commercial standards, and agricultural or horticultural practices?

☒ Yes ☐ No

Notes:

The applicant has registered the product with the Oregon Department of Agriculture as a waste-derived soil amendment, and explained how the material can benefit agricultural and horticultural operations.

3) Effect of Proposed Beneficial Use on Public Health, Safety, Welfare and/or the Environment

Has the applicant demonstrated the proposed beneficial use will **not** create an adverse impact to public health, safety, welfare, or the environment, by providing information substantiating compliance with the criteria listed in the bullet list below?

☒ Yes ☐ No

Notes:

The applicant provided analytical results of ash samples for dioxin, arsenic, cadmium, mercury, lead, and nickel. The values of the metals meet the Oregon Department of Agriculture's limits for non-nutritive metals, and the dioxin concentrations were equal to DEQ's risk-based screening levels for residential soil. The applicant also provided a comparison of the metals content in other soil amendment products on the market, and the metals concentrations were similar

- Has the applicant demonstrated that the material is not a hazardous waste under ORS 466.00?

☒ Yes ☐ No

Notes:

The applicant has determined that the material is not a hazardous waste under OAR 340-102-0011.

- Has the applicant demonstrated that until the time this material is used according to a beneficial use determination, the material will be managed, including any storage, transportation, or processing, to prevent releases to the environment or nuisance conditions?

☒ Yes ☐ No

Notes:

The wood ash is generated from the co-gen combusting operation at the Freres Lumber Mill in Lyons, Oregon. An estimated 2,500 tons of the material each year will be generated and marketed to sell for the beneficial use. According to the BUD application/proposal, the material will be managed properly to prevent any adverse impact to environment and to public health during the production, transportation, and application. The majority of the material will be directly shipped to a bagging plant and packed into water proof plastic bags and sealed. The bags will be stacked on pallets and stored in a warehouse to be delivered to customers. Material destined for bulk sales will be managed so there is no stormwater runoff or blowing dust from the storage pile.

- Has the applicant demonstrated that hazardous substances in the material, if any, meet one of the criteria in the bulleted list below?

☒ Yes ☐ No

  - Hazardous substances do not significantly exceed the concentration in a comparable raw material or commercial product;
  - Hazardous substances do not exceed naturally occurring background concentrations; or
  - Hazardous substances will not exceed acceptable risk levels, including persistence and potential bioaccumulation, when the material is managed according to a beneficial use determination.

Notes:

The applicant also provided a comparison of the metals content in other soil amendment products on the market, and the metals concentrations were similar.

- Has the applicant demonstrated that the proposed beneficial use will not result in the increase of a hazardous substance in a sensitive environment, such as a park, wildlife refuge or wetland?

☒ Yes ☐ No

Notes:

The material will be sold to consumers at a market rate, and it is unlikely that consumers will apply the material to any location other than their own gardens or lawns.

- Has the applicant demonstrated that the proposed beneficial use will not create objectionable odors, dust, unsightliness, fire, or other nuisance conditions?

☒ Yes ☐ No

Notes:

The material is put into water proof plastic bags and sealed. The bags will be stacked on pallets, stored in a warehouse before delivered to customers. Prior to bagging the material will be stored and handled in a manner to not create the above conditions.

- Has the applicant indicated that the proposed beneficial use will comply with any other applicable federal, state, and local regulations? ☒ Yes ☐ No

Notes:

The applicant has also registered the product with the Oregon Department of Agriculture as a waste-derived soil amendment, and explained how the material can benefit agricultural and horticultural operations.

4) Public Involvement Evaluation (Note: this is not a Beneficial Use evaluation criterion)
Determine a public involvement recommendation using the current, ***Guidance to DEQ Solid Waste Program Staff and Managers on Public Notice & Participation*.**

- Is public notice and participation being recommended for this application? ☐ Yes ☒ No