Domtar Paper Company
Marlboro Mill
By-products Land Application Program

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Environmental Specialist

Southeast Sustainable Soils Forum
September 18, 2014

Domtar Paper Company
Marlboro Mill
By-products Land Application Program

• Kraft Pulp and Paper Mill located in Bennettsville, SC
• Began operation in 1990 (Willamette Industries)
• Produce approx. 1,100 tons/day bleached pulp and 1,000 tons/day copy paper, envelope paper, tablet paper, and receipt paper (newest product)
• Chemical Recovery process produces “by-products” – grits, dregs, lime mud and reburned lime. Wood fly ash from wood waste boiler
• Approximately 35,000 tons by-products/year (as of 2013)
• Operate under South Carolina Department of Health and Environmental Control (DHEC) land application permit

The Marlboro Mill

• Land application program began in 1993 with technical assistance from Clemson University
• Regulatory assistance from DHEC and logistical recommendations from Marlboro Mill to help write permit
• Now conduct land application activities in 6 SC counties – Chesterfield, Darlington, Dillon, Florence, Marlboro and Marion
• By-products provided free-of-charge to farmers, landowners and others
• Recipients must provide soil analyses to confirm need for pH adjustment

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Chemical Recovery Cycle/By-products Generation in a Kraft Pulp Mill

Fly Ash Production

International Truck w/Knight Pro-Twin Side-Slinger Spreader
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- Over 400,000 tons to 280+ recipients
- Over 150,000 acres
- Volume equivalent to 400,000 yd³ or a football field 400 feet tall!
- Residual alkalinity is useful for increasing soil pH- similar to that of agricultural lime (2:1 equivalency)
- Row crops and hay/pasture land
- No claim of any micro nutrients or fertilizer benefit
- No known issues adversely affecting crops- actually get repeat requests
- Contractor provides equipment and employees for supervision, delivery and spreading
### Component Analysis

<table>
<thead>
<tr>
<th>COMPONENT, % Unit</th>
<th>CUMULATIVE LIFETIME LOADING RATE LIMIT ( \text{lbs/ton} )</th>
<th>CUMULATIVE LIFETIME LOADING RATE ( \text{lbs/ton} ) (for applied by-product: FA)</th>
<th>GRAINS AND DRUGS (G/D)</th>
<th>LIFETIME LOADING (for applied by-product: RL)</th>
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<tbody>
<tr>
<td>Calcium, mg/kg</td>
<td>212.25</td>
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<tr>
<td>Manganese, %</td>
<td>0.32</td>
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<td>Lead, mg/kg</td>
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<td>Iron, mg/kg</td>
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<tr>
<td>Zinc, mg/kg</td>
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<tr>
<td>Organic Nitrogen, %</td>
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Note: All four products passed the USEPA Regulatory Limits for TCLP Parameters.

**Δ**: These items (in red) are analysis-required parameters for Class I materials. (SC Regulation 61-107.15 Definitions Section B. 6)

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**Domtar Paper Company - Marlboro Paper Mill**

**BY-PRODUCTS ANALYSIS - July 8, 2014**

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QUESTIONS/COMMENTS