

# Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*  
 16817 - 155th Pl SE  
 Renton, WA 98058

Ticket: 9295 Job: 14708 Report Date: 12/15/2009	Plant of Origin: <i>Centralia US</i> Sample ID: <i>Ce-044-09</i> Docket: 3032782 - 3032854	Sample Date Range: 10/17/2009 to: 10/22/2009 Date Received: 10/27/2009
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<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>	CSA A3000-08 Specifications	
	<u>Class F</u>	<u>Class CI</u>
Total Silica, Aluminum, Iron: 73.3		
Silicon Dioxide: 50.6		
Aluminum Oxide: 17.0		
Iron Oxide: 5.7		
Sulfur Trioxide: 0.6	5.0 Max	5.0 Max
Calcium Oxide: 14.2	8 Max	8 - 20
Moisture Content: 0.0	3.0 Max	3.0 Max
Loss on Ignition: 0.2	8.0 Max	6.0 Max

<u>Physical Test Results</u>	CSA A3000-08 Specifications	
	<u>Class F</u>	<u>Class CI</u>
Fineness, Retained on #325 Sieve (%): 19.7	34 Max	34 Max
Optional Strength Activity Index (%)		
ASTM C-311 (28 Days @ 23 C): 100.7	75 Min	75 Min
Water Requirement, % of Control: 95.0		
Soundness, Autoclave Expansion (%): 0.01	0.8 Max	0.8 Max
Density Mg/m <sup>3</sup> : 2.60		

Comments:

CTL | Thompson Materials Engineers, Inc.

*Orville R. Werner II*

Orville R. Werner II, P.E.

