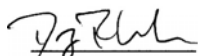


**ASTM C618 / AASHTO M295 Testing of
Navajo Generating Station Fly Ash**

Sample Type: 3200-ton	Report Date: 9/23/2015
Sample Date: 8/9 - 8/11/15	MTRF ID: 1990NV
Sample ID: NV-073-15	

Chemical Analysis	ASTM / AASHTO Limits		ASTM Test Method
	Class F	Class C	
Silicon Dioxide (SiO ₂)	59.73 %		
Aluminum Oxide (Al ₂ O ₃)	23.01 %		
Iron Oxide (Fe ₂ O ₃)	4.47 %		
Sum of Constituents	87.21 %	70.0% min 50.0% min	D4326
Sulfur Trioxide (SO ₃)	0.37 %	5.0% max 5.0% max	D4326
Calcium Oxide (CaO)	4.84 %		D4326
Moisture	0.05 %	3.0% max 3.0% max	C311
Loss on Ignition	0.85 %	6.0% max 5.0% max 6.0% max 5.0% max	C311 AASHTO M295
Available Alkalies, as Na ₂ O _e When required by purchaser	1.36 %	not required 1.5% max 1.5% max	C311 AASHTO M295
Physical Analysis			
Fineness, % retained on #325	17.13 %	34% max 34% max	C311, C430
Strength Activity Index - 7 or 28 day requirement			C311, C109
7 day, % of control	84 %	75% min 75% min	
28 day, % of control	84 %	75% min 75% min	
Water Requirement, % control	95 %	105% max 105% max	
Autoclave Soundness	0.00 %	0.8% max 0.8% max	C311, C151
Density	2.25		C604

Headwaters Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods and meets the requirements of ASTM C618.


 Doug Rhodes, CET
 Facility Manager



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