

Freeze-Thaw Processes Degrade Post-fire Water Repellency in Wet Soils

Ekaterina Rakhmatulina*¹ and Sally Thompson^{1,2}

¹Civil and Environmental Engineering, University of California Berkeley, Berkeley, California

²Civil, Environmental and Mining Engineering, University of Western Australia, 35 Stirling Hwy, Crawley, Western Australia

Running Title: Degradation of Post-fire Soil Hydrophobicity

Acknowledgements: National Science Foundation EAR grant 1013339 funded this work. Markus Berli provided insightful manuscript suggestions and project consultation. Thank you to the staff at the University of California Berkeley Electron Microscope Laboratory for advice and assistance in electron microscopy sample preparation and data collection. Weather station data were provided by the NSF-supported Southern Sierra Critical Zone Observatory.

Data Availability Statement: The data that support the findings of this study are openly available in Hydroshare at <http://www.hydroshare.org/resource/a042f54f2b42414aa7003937390f575f>. Critical Zone Observatory data is available in Hydroshare at <http://www.hydroshare.org/resource/98574a24d4344b6bb99d12db5f1c4260>

Key Words: wildfires, erosion, freeze-thaw cycles, hydrophobicity, Molarity of Ethanol Drop test, Sierra Nevada, soil organic matter, scanning electron microscopy

*Corresponding author: erakhmat@berkeley.edu