

880 **Appendix 1 (or Supporting Online Materials)**

881 *CRISM data*

882 Table 1 shows the CRISM data that were used to extract infrared spectra of clay-  
883 bearing terrains on Mars. The headings describe: the general geographic description  
884 (e.g. Nili Fossae), the longitude (long) in east coordinates, latitude (lat) in degrees  
885 north, the geologic context of the deposit interpreted from a basic analysis in JMARS,  
886 the full CRISM image identification number (CRISM image ID), a short version of the  
887 CRISM image ID (code) to help refer to the images more easily, and arbitrary region  
888 of interest number (ROI) which can be used to identify specific ROIs, X and Y  
889 coordinates in the CRISM image (X,Y ROI) which represent the pixel sample and line  
890 number within the un-corrected CRISM image where the ROI was centered, the  
891 number of pixels included in each ROI, and the wavelength of the absorption  
892 maximum of the main metal-OH combination band of interest in this study  
893 (primary) and another feature at longer wavelength that wasn't emphasized in this  
894 study (secondary).

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896 *Sources of "known compositions" presented in Figure 10*

897 Chemical compositions for Martian meteorites were taken from the Martian  
898 Meteorite Compendium and references therein. All samples represent bulk sample  
899 compositions measured using a range of techniques described in the source. Known  
900 compositions of "basalt on Mars" represent basaltic rock chemistries measured  
901 using the Alpha Proton X-ray Spectrometers (APXS) aboard the Mars Exploration  
902 Rovers and Curiosity rover. The rock compositions correspond to: basaltic sand in

903 Meridiani Planum (average) (Arvidson et al., 2014), Adirondack, Wishtone, Irvine  
904 and Backstay in Gusev Crater (McSween et al., 2009), and Jake\_M in Gale Crater  
905 (Stolper et al., 2013). The “clay minerals on Mars” compositions correspond to:  
906 SandCherry, a clay-rich veneer near Endurance Crater in Meridiani Planum  
907 (Arvidson et al., 2014), John Klein and Cumberland – two mudstones in Gale Crater  
908 (both correspond to the smectite + amorphous components) (Vanimann et al.,  
909 2013). The “clay minerals in meteorites” data correspond to: ferric saponite and 7Å  
910 clay minerals in Lafayette meteorite (Chengela and Bridges, 2013; Hicks et al.,  
911 2014).