Using Laboratory Saturation Percentages to Estimate Soil Texture

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Saturation percentage is the ratio of water to soil in a saturated paste, multiplied by 100 (USDA, 1954). The volume of water required to create a saturated paste varies with soil properties, including texture (Stiven & Khan, 1966). In laboratory analyses, to measure soluble ions a saturated paste is created and the water to soil percentage is reported. It is this saturation percentage that is used to convert soluble ions concentrations from mg/L to mg/kg. Soil salinity analysis is one of the most common soil analyses in laboratories and by providing a means to estimate soil texture from the data, there can be increased precision of logging soil textures as well as a reduced need for traditional soil texture analysis.

Using saturation percentages, this proposed research will evaluate correlations between texture and saturation percentage. To date, the only known research on this issue has been conducted in Pakistan in 1966. The proposed research will focus on Alberta mineral subsoils and is proposed to use data, already analyzed by laboratories and consultants to correlate

saturation percentage to clay content and soil texture. This research should provide a means to reduce the needs of traditional soil texture analyses while providing a means to quickly review and assess logging of soil lithologies from site investigations.