Recommendation for the P testing requirement to be used for the upper media layer of bioretention systems and gravel wetland soil layers in Vermont

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Final mixes must have a Phosphorus Saturation Ratio (PSR) less than or equal to 0.1. PSR is to be determined using the following protocol:

1. Samples are to be air dried and sieved through 2 mm prior to testing
2. Air-dry, sieved soil samples are to then be extracted with the Mehlich-3 solution (0.2 M CH_3COOH + 0.25 M NH_4NO_3 + 0.015 M NH_4F + 0.013 M HNO_3 + 0.001 M EDTA) by shaking a soil-solution suspension for 5 minutes at a 1:10 (soil mass : solution) ratio, followed by filtering to remove particles above 2 µm in size (0.45 µm pore size is also acceptable).
3. Extracts from the Mehlich-3 procedure are to be analyzed for P, Fe, and Al by ICP-OES.
4. The Phosphorus Saturation Ratio (PSR) is then calculated as follows:

$$PSR = \frac{\left(\frac{P_{M3}}{31}\right)}{\left(\frac{Fe_{M3}}{56}\right) + \left(\frac{Al_{M3}}{27}\right)}$$

where,
P_{M3} = Mehlich-3 P in mg P per kg dry soil
Fe_{M3} = Mehlich-3 Fe in mg Fe per kg dry soil
Al_{M3} = Mehlich-3 Al in mg Al per kg dry soil
Mehlich-3 extractions must be used following the above protocol. Other soil test extractions, including Modified Morgan tests, oxalate extractions, water extractions, or extractions used to quantify total elements, are ***not*** acceptable.