

Impacts of salt loading on nutrient and metal processing in stormwater bioretention

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Restoration Question

How do different levels of salt present in a BMP due to road application impact the BMP's nitrogen removal efficiency and export rates out of the BMP of pollutants such as heavy metals?

Key Findings

- Stormwater bioretention is an effective management practice for removing nutrients, sediment, and metals.
- For nitrogen, bioretention may be subject to leaching, depending on soil media characteristics. Presence of an internal water storage zone can ensure best nitrogen retention. Nitrogen performance is also strongly linked to plant health, and thus can be reduced when salt toxicity affects plant health.
- Phosphorus, sediment, and metals are all generally retained well in bioretention basins. However, all suffered reduced removal efficiencies under elevated salt dosing, with some periods of metals leaching occurring. Better phosphorus removal was observed with implementation of an internal water storage zone.
- While performance of bioretention can be enhanced by use of salt tolerant plants and presence of an internal water storage zone, it is clear that reductions in de-icing salt application are also critical.



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