Reclamation of Owens Lake Soils to Enable Partial Vegetation. (S06-suarez190406-Oral)

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Abstract:

Exposed Owens Lake bed sediments are susceptible to wind erosion and have adversely impacted air quality in the Owens Valley. Partial vegetation is proposed as a method of reducing dust emissions. The sediments are currently highly saline and sodic with EC extract values ranging from 70-140 dS/m, ESP values of 95-100 and pH values up to 10.0. Traditional soil reclamation, reducing the EC to below 4 dS/m and the ESP to below 10 is prohibitively expensive and unnecessary. The objective of the present study is to determine the reclamation needs necessary to achieve partial vegetation with native plants. Soil stability was evaluated using flocculation tests and saturated hydraulic conductivity measurements on both undisturbed and disturbed soil cores. Stability tests utilized NaCl solutions of 500, 200, 100, 70, 50, 30 and 10 mmol/L. Most soil cores evidenced sharp reductions in hydraulic conductivity and optical transmission in the range of 200-100 mmol/L. The initial requirement to maintain salinity above EC 15 dS/m is close to the salt tolerance for the native species under consideration. Additional study is being undertaken to better define soil stability in the range of EC 10-20 dS/m and to evaluate the long term changes in soil chemistry and stability.

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