

Salinity and Sodicity Assessment by EMI at Chamizal Memorial

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In collaboration with Congressman Beto O'Rourke (TX-16), and Chamizal Memorial Park, U.S. National Park Service

BACKGROUND

Congressman Beto O'Rourke (TX-16) has made restoration of vegetation in the Chamizal Memorial park one his top priorities. His office approached the El Paso Texas A&M AgriLife Research Center for help in developing suitable management practices to restore the deteriorated turf grass. Chamizal National Memorial Park was constructed in 1969 to commemorate the Chamizal Convention (treaty) of 1963 that ended a long-standing border dispute between the U.S. and Mexico. It serves as one of the main park and recreation areas in the El Paso region. Several factors may be contributing to poor turf grass conditions and bare areas. These include the use of fine textured upland soil to create artificial mounds to provide variation in topography, the choice of tall fescue which is not heat or salt tolerant and malfunctioning irrigation systems or management practices which could result in salt accumulation in the root zone. An electromagnetic induction (EMI) technique was used to measure and evaluate salinity and sodicity in the turf areas for developing appropriate salinity management practices to improve vegetation conditions at the park.



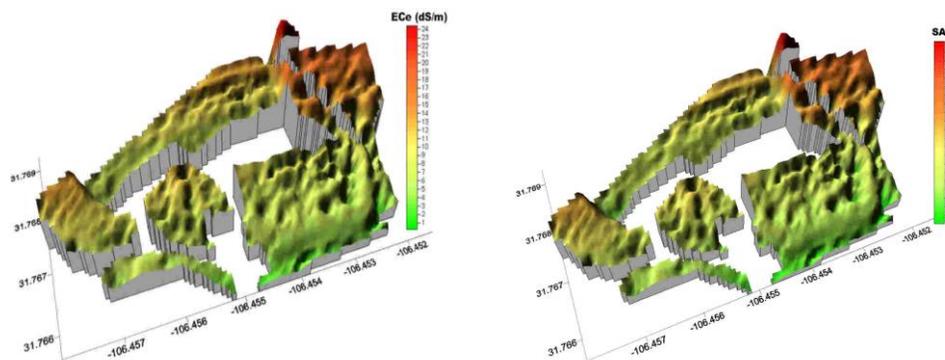
Chamizal Memorial Park

OBJECTIVES

- Measure and assess salinity and sodicity distribution in the root zone of turf areas of Chamizal Memorial.
- Develop appropriate management practices for landscape managers to improve vegetation conditions at the Chamizal Memorial.

FINDINGS AND BENEFITS

- Bare spots in the park coincided with areas with high salinity (EC_e) and sodicity (SAR) confirming that salinity is a major reason for poor vegetation conditions.
- A majority of the park soils had salinity and sodicity levels that exceeded the tolerance limit of the type of grass planted. Evapo-concentration of salts already present in the soil and irrigation water contributed to high soil salinity.
- Greater salinity levels were associated with higher clay content soil which retains salts. These and low amounts of irrigation water delivered by faulty irrigation system resulted in lower moisture conditions further stressing turf and other vegetation.
- Results of this study were used to develop appropriate salinity management practices as well as suggestions for improving vegetation conditions such as soil amendments and alternative irrigation equipment and management practices.
- Recommendations to improve soil and turf grass conditions have been conveyed to the park managers as well as to the Congressman's office.



Salinity and sodicity distribution within the turf areas of Chamizal Park