

Using the Knowledge of Residential Landscape Vegetation Spatial Variability to Support Water Conservation

Most of the domestic water consumed in the United States is used to irrigate residential landscapes. Albuquerque, the largest and the most populous city in New Mexico is no exception. This is a critical problem because ground water, the main source of Albuquerque's water, is diminishing. Albuquerque's Per Capita Water Use was 167 gallons/day in 2007 and City is targeting 155 gallons/day by 2024. Estimating and conserving residential landscape water usage requires knowledge about the city's spatial distribution of residential vegetation. Thus, the goals of this study were to (i) explore the spatial differences in residential landscape vegetation components among Albuquerque zip codes and (ii) develop ground-proofed zip code-specific mixed landscape coefficients which account for the proportions of residential vegetation types in each zip code and their water consumption level. To accomplish the first goal, 480 residential parcels were randomly selected for study. For each parcel, residential vegetation features were identified on very high spatial resolution (0.5ft²) true color aerial photographs using the object-oriented classification module in ENVI EX 4.7.1. Zip codes had different vegetation percentages in their residential landscapes relative to their greenspace. Tree, shrub, and grass cover percentages ranged from 18-86%, 6-45%, and 7-42%, respectively. To accomplish the second goal, we used Region Match Analysis to adapt landscape coefficients developed for California to Albuquerque. California climate region 2 (Central Valley) was the best match with Albuquerque. Using our knowledge of the residential landscape vegetation components developed in the first part of this study, we developed zip code mixed landscape coefficients that are useful to quickly estimate residential landscape water budgets. This information was

incorporated into a water budgeting website (www.nmclimate.nmsu.edu/wb) so that contractors, planners, and homeowners could use it in planning landscapes.

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