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Use of Community-Owned and -Managed Research To Assess Infrastructure Disparities and the Quality of Water and Sewer Services in Marginalized and Underserved Environmental Justice Communities

Sacoby M. Wilson¹, Omega Wilson², Christopher D. Heaney³, Natasha Bumpass³, and John Cooper⁴

¹Institute for Families in Society, University of South Carolina, Columbia, SC; ²West End Revitalization Association, Mebane, NC; ³Department of Epidemiology, Gillings School of Public Health, University of North Carolina, Chapel Hill, NC; ⁴MDC, Inc., Chapel Hill, NC

Background and Objectives: The West End Revitalization Association (WERA) is a community-based organization (CBO) in Mebane, North Carolina, that was organized in 1994 to address the illegal planning of a local highway without the input of impacted stakeholders and with infrastructure disparities—particularly the lack of basic amenities (sewer and water services). WERA built a partnership with local researchers to address the planning inequities and infrastructure disparities.

Methods: WERA employed its community-owned and -managed research (COMR) approach to collect data on infrastructure disparities and environmental hazards. Maps were created of sewer and water infrastructure and environmental hazards. Community monitor (CM) training workshops, household water and sewer service surveys, and drinking water and surface water tests of fecal pollution were completed at private (target) and regulated public (referent) service households in WERA neighborhoods.

Results: Maps illustrated infrastructure and exposure disparities in WERA neighborhoods. CMs collected survey data showing a mixture of failing private wells and septic systems and regulated public drinking water and sewer lines. Septic system failure ranged from 11-18 percent. Higher turbidity levels were observed in private wells compared to regulated public drinking water ($p < 0.0001$). There was little evidence of differences in surface water fecal pollution at target and referent sites. Drinking water and surface water fecal pollution levels exceeded limits protecting health at target and referent households.

Conclusions: COMR methods built community capacity to document infrastructure disparities and fecal contamination of well water and surface water. The COMR approach can be used by other CBOs to document infrastructure disparities.