# An Ethnohydrologic Evaluation of Water Quality in Phoenix, AZ

## In progress research project

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## Introduction

This research project is being conducted as a joint project of NSF Central Arizona-Phoenix Long Term Ecological Research (CAP-LTER) and NSF Decision Center for a Desert City (DCDC) at Arizona State University. It is a follow-up to the Phoenix Area Social Survey II (PASS II), a forty-neighborhood survey conducted in greater Phoenix.

## Research Design

Initial results from the PASS II study indicated that more than 40 percent of survey respondents were concerned about water supply, drinking water safety, accidental releases of industrial chemicals, and soil and groundwater contamination in Phoenix. This follow-up study investigates the public's perception of water quality and safety in Phoenix.

The data collection is being conducted in four Phoenix neighborhoods selected from the original forty neighborhoods used in the PASS II study. These neighborhoods were selected based on the mean assessment of water safety yielded in the PASS II study, with two neighborhoods having a high level of water safety concern and two with a low level of water safety concern (see Fig 1).

Approximately thirty respondents from each of the four neighborhoods are being interviewed. We use a successive free listing technique to elicit local ecological knowledge in three domains: water quality, causes of variation in water quality, and ways to improve water quality. We present preliminary analyses of response frequencies here. Future analyses will explore Phoenix residents' cognitive models of water quality issues using multi-dimensional scaling and cultural consensus analysis.

## Importance of the Study

The primary importance of this study lies in the ability to understand Phoenix residents' cognitive models of tap water quality, causes of water contamination, and appropriate mitigation actions in these four neighborhoods. This study can be used as a tool in decision making processes and has possible implications for community health.

## Preliminary Results
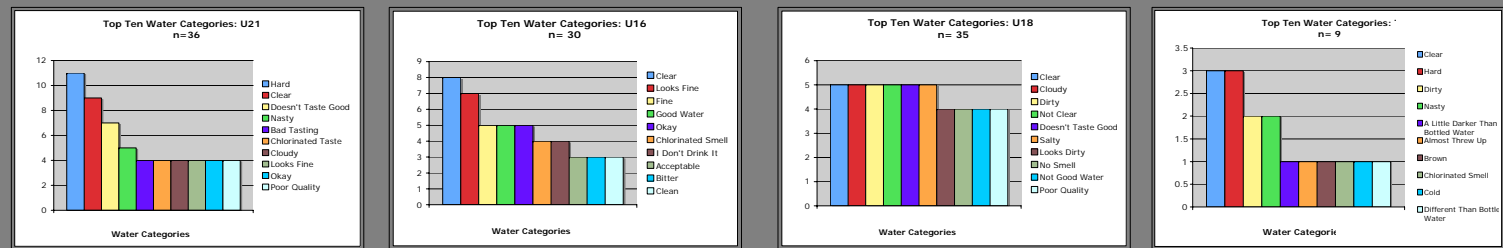


Figure 2. Top Ten Water Categories for Four Phoenix Neighborhoods

The results for these neighborhoods are mixed. It seems that in general the majority of Phoenix residents felt that their water was clear, but it is not uncommon to see that answers are conflicting. While many neighborhoods mentioned clear as a top descriptor, it was often tempered by references to several negative qualities, whether it be about quality, taste, look, etc. The neighborhoods varied in composition and this most likely affected manner in which the tap water was perceived. U21 is a large, well-maintained neighborhood. Residents are predominately white, wealthy, and really seemed to have a problem with the hardness of the water and the taste. U18 is an impoverished neighborhood near an industrial corridor, in which residents are predominately Latino. While clear is also a top descriptor for them, it does not seem to capture the overall sentiment about the water. In general it seems as if the water in this area is associated with several negative flavors and the look is anything but clear. U16 is a well-kept historic neighborhood in which residents' income levels and ethnic backgrounds are mixed. This neighborhood appeared to have the most positive outlook on the water. In general the residents didn't drink it, but they felt their water was good. It was associated with a chlorinated smell and bitter taste, but still acceptable. T15 is a densely-populated neighborhood containing apartment complexes and residents are predominately Latino. We are currently in this neighborhood, but thus far the attitude towards the water appears to be fairly negative with words like hard, dirty, and nasty coming in the top ten; despite clear coming in as the top descriptor.
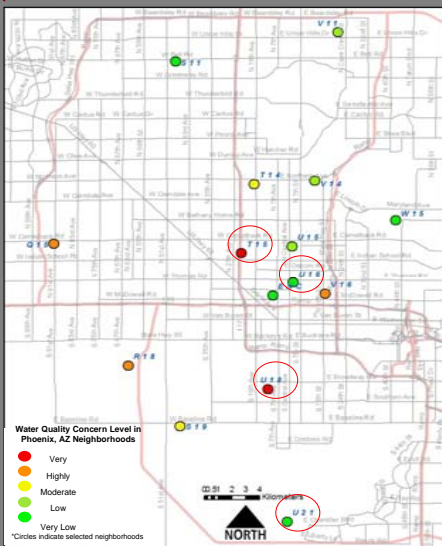


Figure 1. Water Quality Concern in the Greater Phoenix Area.

U21: A large, well-maintained neighborhood. Residents are predominately white and wealthy.

U18: An impoverished neighborhood near an industrial corridor. Residents are predominately Latino.

U16: A well-kept historic neighborhood. Residents' income levels and ethnic backgrounds are mixed.

T15: A densely-populated neighborhood containing apartment complexes. Residents are predominately Latino.